Architectural Street Credibility:

Reframing Contemporary Architecture to

Sidewalk Level with Images from Google Street View

by

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ABSTRACT

The purpose of this research was to assess the condition of the human/building interface at sidewalk level by reframing our view of contemporary architecture using Google Street View images. In particular, the goal was to find a means by which aesthetic engagement in the urban cultural ecology could be measured.

Photo-elicitation, semantic differential, and visual assessment methods were adapted and combined to develop a photo-semantic assessment survey instrument for this study aimed at evaluating respondent preference for building images. Architectural adjective usage amongst 14 graduate students was surveyed, and the resulting 175-word list was synthesized down to seven positive and seven negative adjectives. Eleven representative buildings were selected from the Phaidon Atlas of 21st Century World Architecture, and photographic Street Views were created.

The photo-semantic assessment survey instrument was administered to 62 graduate students given their demographic is reasonably similar to the urban walker stakeholder in the outcome. Respondent preference for the building images was then ranked ordered and correlations were run against various image factors including facade complexity, transparency, and streetscape quality.

Moderate to strong correlations between preference and several image factors were observed indicating that certain building design factors, particularly facade complexity, may play a predictable role.

Several avenues for future research are suggested including the comparison of lab versus on-site respondents; the comparison of user types including targeted, passerby and tourist; the effect of skyline on user preference for Street Views; and the effect of participation in the building making process on short and long term respondent preference.

DEDICATION

To any building makers that might one day stumble upon this imperfect study... I hope you carry the torch, because I've come to believe there is something wrong with early 21st century contemporary architecture, and like it or not, it will be up to you to solve the problem. Mid-20th century architect Gottfried Böhm's thoughtful wife once remarked "We have built much, but you will have to build more to make up for our mistakes." She was right and my hope is you are up to the task.

First things first - you must believe that architectural outcomes can be measured. It's vital. Whether or not you believe the adage that what gets measured is what get's done, you must believe that building making has a social outcome and that its outcome ought to be measured in terms of the people it affects on the street. In your deliberations, pause to consider the people who might pass by your building, if only for a moment, and how it might inform and transform them forever.

Then, think of the end. Were your building uncovered by an archeologist 1,000 years hence, she would find *something*. "Civilizations are known mostly by their buildings and some *only* by their buildings," said architect Philip Johnson. Amazingly, you are responsible for that communication – what shall it be and what shall she find?

Here's the rub: your job is not to say something personal, but to allow the maximum number of artisans to visibly demonstrate the strength and character of the entire community in which the building is built. Building makers must put ego completely aside and let the community speak. It's not your building, it's theirs - despite what you think your deed, contract, copyright, or ego might say. Soon enough, you'll learn that the community's need and right is much more powerful and meaningful than your own, and then you'll understand the problem and your ultimate purpose in making buildings. I look forward to that day.

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PREFACE

Not long ago, noted contemporary architect Elizabeth Diller gave the 2013 Rio Salado Architecture Foundation Lecture at the Tempe Center for the Arts. Diller's opening statement mentioned she "had been warned" by the event's organizers to "establish her architectural street cred" before venturing into her more favored esoteric topics (Diller, 2013). She attempted to comply by showing hero photographic shots of notable buildings designed by her firm. Few of the images emphasized life on the street or sidewalk. Rather, her street cred took the form of glamorous architectural magazine cover art. In doing so she lost the opportunity to emphasize the more socially valuable intersection of building and human activity at the street that characterizes some work of the firm, and could have established her real time street cred to a greater degree.

While Diller's selection of slides in response to the request may have been appropriate for the event and audience, it does implicate the present discussion. This research is about real architectural street credibility – the cred of real buildings, where they connect with real sidewalks, where real people walk, and the ability of architecture to make people really believe in the communicative power of buildings.

Its aim is to document and examine what may be the weakest aspect of contemporary architecture – its relationship to life on the sidewalk. The vehicle for doing this will be the most complete and current image catalogue of the building/sidewalk interface ever assembled, Google Street View.

A major purpose of this research is to assess the condition of the human/building interface at sidewalk level by reframing our view of contemporary architecture using Google Street View images. In doing so, we may ask a number of questions. To what extent do buildings aesthetically engage passersby? To what degree are aesthetic relationships created? Is there a dialogue between humans and

buildings? If so, what is being said? Can humans identify with contemporary architecture by self-extension? If the answer is no to any or all of the above, is it the fault of architectural neutrality? Or is there a lack of artisan provided purposefully designed-in understandable meaning? Does the psychology of boredom play a role? Perhaps the most important question Google Street View can help answer: Are these buildings the best we can make? Do contemporary architects have meaningful street credibility?

Figure P-1. Lecture Poster Retrieved from https://asuevents.asu.edu/node/6157

CHAPTER 1

INTRODUCTION

The root problem giving rise to this research was the observation that contemporary architecture appears to have privileged the skyline view over the sidewalk level where humans encounter and engage with buildings on a personal and practical basis. The aim of this work is to verify if the problem actually exists and to explore its dimensions.

Figure 1-1. Boston Institute of Contemporary Art by Diller Scofidio + Renfro, from a viewpoint not accessible to the public. Retrieved from http://www.flickr.com/photos/gocardusa/3789242079/in/photostream/

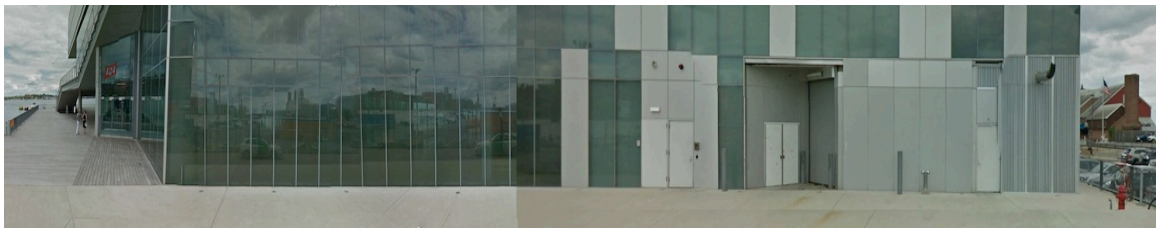

Figure 1-2. Boston Institute of Contemporary Art from a Google Street View camera.

Critiques of modernist sidewalk treatment have been produced steadily since the early 1960's. None laid it quite so bare as the first sentence from Jane Jacobs'

classic *The Death and Life of Great American Cities,* which devoted an entire chapter to life on the sidewalk. "This book is an attack on city planning and rebuilding" (Jacobs, 1961a, 1). "I shall be writing about how cities work in real life, because this is the only way to learn what principles of planning and what practices in rebuilding can promote social and economic vitality in cities, and what practices and principles will deaden these attributes." In the study at hand we will expand on Jacobs' critical exploration of modernist city planning and extend it to the primary physical result – the modernist-derived contemporary buildings that greatly define our urban cultural ecology. We will also reverse Jacobs' dictum "eyes on the street" from her chapter on sidewalks and focus instead on Google's peculiar and particular eye on buildings.

The relevance of the topic is growing: more and more people are pouring into urban centers that are rapidly becoming less and less aesthetically humane (Moore, Gould, & Keary, 2003). The root cause of diminishing humaneness is not the overcrowded condition per se. It is the central modernist principle that erasing all signs of the human cultural hand and story results in more obsolescence-proof designed objects per Adolf Loos' misinterpreted manifesto of 1910 (Loos, 1962). The pursuit of ornament-free built environments, devoid of human narrative and content, deny people the opportunity to aesthetically engage with their architecturally neutral surroundings and thereby puts them into a form of solitary confinement (Bishop, 2004).

The over-arching research question is this: How will reframing our view of contemporary architecture from the professionally taken hero shots of overall buildings to Google Street View sidewalk level images inform or change our opinion regarding the relative aesthetic success of buildings? To a certain extent this is an exercise in self-discipline given that architectural photography is appealing and tends to emphasize the predominant obsession of much contemporary work, namely,

overall convoluted form. Yet the sidewalk is generally the one and only place where people truly interact with a building. That intersection should be given its due (Nelligan, Mauro, & Duneier, 2008).

The most relevant examples of using Google Street View to assess the quality of the built environment come from the discipline of public health. For many years public health officials had been conducting in-person neighborhood environmental audits in an effort to pinpoint where public health issues and costs might be likely to increase. Several factors in the built environment including visual chaos and monotony are proven leading indicators. In an effort to reduce research labor costs, Google Street View image analysis was implemented and a high correlation with prior in-person audits was found (Anguelov et al., 2010; Clarke, Ailshire, Melendez, Bader, & Morenoff, 2010; Edwards et al., 2013; Rundle, Bader, Richards, Neckerman, & Teitler, 2011; Wilson & Kelly, 2011). Not only does this research validate the use of Google Street View for assessment of the built environment, it also points to the relationship between architecture and human health, psychology, and sociology.

Several branches of psychology are engaged in examining the relationship between humans and buildings. Architectural psychology and environmental psychology are the two most closely related to this research. The Architectural Determinists of the 1970's hoped to find a causal relationship between architectural design and human behavior (Purcell, 1987). The opposite was found to be the case owing to the human proclivity for adapting to environments and doing the opposite of what a designer might have intended. (Gehl, 2011), (Whyte, 1980), (Zeisel, 1975). Philip provides an excellent description of the transition from "dry" determinism based on the behavioristic tradition to the "wet" cognitive psychology that tends to dominate today (Duncan Philip, 1996). Pol also describes the transition from architectural psychology to environmental psychology (Pol, 2007).

Unfortunately neither school had much effect on architectural practitioners whose deeply entrenched emphasis is overwhelmingly the creation of architectural form rather than users or behavior (Nasar, 1994).

Despite having little impact on the architectural profession, environmental psychologists have pursued research into the concept of place attachment undeterred. Place attachment is an easy to understand but hard to define concept. The general notion is that place can elicit a range of human emotions created by experience of the place or by socially constructed knowledge in relation to the place (Morgan, 2010). To the extent that emotions are elicited, a bond is formed between the person and place (Scannell & Gifford, 2010), (Rollero & De Piccoli, 2010), (Lewicka, 2010, 2011; Manzo, 2003). The opposite case has also been studied, which might be called place de-tachment or place attachment disruption wherein the experience of a place can have negative impacts and create avoidance behaviors (Brown & Perkins, 1992). A potential culprit in this regard has been explored by researchers in the psychology of boredom, which is generally thought to be caused by lack of engagement (Eastwood, Frischen, Fenske, & Smilek, 2012).

A broader theory has been proposed by researchers in architectural sociology, and the Symbolic Interactionists in particular. The general notion is that buildings communicate shared human symbols and accordingly the self and designed physical environment are intertwined (Smith & Bugni, 2006). Moreover this concept has been expanded to note that a primary purpose of buildings is to stabilize social life (Gieryn, 2002). The idea of humans developing personal relationships with inanimate objects, including rocks, has further been validated empirically in work based on Belk's self extension construct (Kiesler & Kiesler, 2004).

The work of architectural and environmental psychologists and sociologists tend to arrive at a common conclusion – that human/building engagement is key.

They have compatriots in the philosophical discipline of environmental aesthetics as well. Berleant and Carlson have argued that engaged participation rather than disengaged contemplation constitutes the substance of art and architectural appreciation (Berleant & Carlson, 2007; Berleant, 1986; Carlson, 1993). A corollary in the world of art history and criticism exists as well, which has broadly come to be known as relational aesthetics (Bishop, 2004, 2005; Bourriaud, Pleasance, Woods, & Copeland, 2002; Kester, 2004). Their central tenet is that the success of a work of art should be judged by the extent to which a dialogue or relationship is created between the observer and the object. A common method of achieving that desired result is to have the user participate in the creation of the object or event.

Relational aesthetics has led to a number of developments in art and architectural practice; namely, the notion of curatorial and participatory practice. Curatorial practice is the concept that managing a group of artists to produce work within the confines of a given theme is itself the practice of art (Jacob & Brenson, 1998), and delivers art in a manner that is more appropriate to contemporary audiences. Within the practice of architecture this has predominantly taken the form of incorporating users and artists into the design team, primarily in an advisory role, which has failed to produce the hoped for relational result (Fernie, 2006; Forsyth & Jenkins, 2009).

Thus far we have looked at the work of the many disciplines investigating the relationship between humans and buildings – but what about the practitioners of architecture themselves? What have they accomplished in this regard? The study of buildings that are built is generally known as the Post-Occupancy Evaluation (POE). POE studies are more prevalent for interior architecture, but they extend to the exterior as well. The focus on interiors generally goes to adjacencies, spatial relationships and time/motion activities. "Did we get the copy machine in the right

place?" is a typical question. With regard to building exteriors the focus is generally on the environmental performance of the building envelope. "Are we paying about as much as we planned for heating and cooling?" is a typical question. But POE studies are few and far between, because of numerous barriers including cost, and partly because once the building is erected there's not much that can be done, so why bother? (Carthey, 2006; Cooper, 2001; Hadjri & Crozier, 2009; Sherman, Varni, Ulrich, & Malcarne, 2005; Vischer, 2001). And with regard to a POE of the building's relative success at aesthetically engaging the public, that job falls to the for-profit media outlets and their architectural critics most of whom visit the building for an hour or two at most and often conduct their evaluations by photograph alone.

It is reasonable to assume that the motivations and expectations of academic researchers from the disciplines of psychology, sociology, philosophy and art history are quite different than the motivations and expectations of practitioners in the field of architecture. In fact, the difference between architects and architectural laypersons has been the subject of much research all by itself (Gifford, Hine, Muller-Clemm, Reynolds, & Shaw, 2000). The predominant conclusion of these studies has been that architects view the role of buildings and the aesthetics of buildings much differently than everyone else, and not necessarily in a good way (Akalin, Yildirim, Wilson, & Kilicoglu, 2009; Groat, 1982).

In a sense, the method proposed for this study – the evaluation of extant buildings by examining Google Street View images – is a form of post-occupancy evaluation. And the focus will be on evaluating the images to assess to what extent the design has incorporated elements and/or features that promote human/building aesthetic engagement, relationship and dialogue. Accordingly, it is critical to understand what those contributing factors might be and how they might be expressed. It is not enough to say that there ought to be engagement, we must go

further and determine how it has and could be accomplished so that we may discern if it has been accomplished in any of the Google Street View images to be analyzed.

This discussion begins with the fundamental underlying concept that humans are *homo narrans* – beings that experience and understand the world through narrative (Fisher, 1985). And that while narrative and non-narrative means of discourse are both available, direct narrative forms have primacy for humans (Georgakopoulou & Goutsos, 2000). And yet while narrative definitively promotes engagement, most if not all, contemporary architecture has adopted the non-narrative method of discourse. The story that there is no story is how an architect friend once described it, despite the notion that design is often seen as a form of communication (Crilly, Good, Matravers, & Clarkson, 2008).

Nonetheless, what we will seek in the Google Street View images is evidence of engagement and how it was achieved. Accordingly the first reflection will be on narration. Purposefully designed-in understandable meaning is at the core of Berleant's understanding of how aesthetic engagement in the cultural ecology works (Berleant, 1986), though it must be coupled with user awareness and appreciation. Accordingly, the second observation we could make is to ascertain what passersby in the images appear to be doing with respect to the building and the extent to which they appear to be aware and appreciative.

While the analysis of Google Street View images of contemporary architecture by a trans-disciplinary team could possibly be considered a form of post-occupancy evaluation as considered above, the process really falls under the research methods known as photo-elicitation and visual analysis. Photo-elicitation has its roots in anthropology and sociology while visual analysis comes to us from landscape design and urban planning.

In the mid-1950's anthropologist John Collier was conducting fieldwork on the relationship between the built environment and mental health in the Maritimes of Canada. By serendipity he stumbled upon the notion of showing relevant documentary photos to survey respondents resulting in the collection of richer interview data than by standard survey form alone (Collier & Collier, 1986; Collier Jr, 1957, 1995). The basic premise is that exposing respondents to photographs of themselves, their surroundings, history, and culture can elicit responses more deeply felt and less biased by survey question construction. The technique is now considered a valuable tool in the social science researcher's bag of tricks (Clark-Ibanez, 2004; Harper, 2002; Suchar, 1988; Van Auken, Frisvoll, & Stewart, 2010). Research conducted comparing the efficacy of dynamic (video) imagery versus static (photographic) imagery has pointed to less effectiveness due to the introduction of a greater range of variables (Heft & Nasar, 2000).

The tradition of visual analysis research of the natural environment is nearly as long as that of photo-elicitation. Spurred by the availability of funding for impact studies resulting from the environmental movement of the 1960's and 70's, the United States Department of Agriculture Forest Service Division sponsored a range of studies based on the photo-elicitation technique aimed at determining user preference for various contemplated manipulations of the natural landscape environment (S. Kaplan, Kaplan, & Wendt, 1972). The focus on gathering data from layperson groups via photo-elicitation garnered the same expert/layperson dilemma as the architect/non-architect situation described above (Daniel, 2001).

A unique adaptation of photo-elicitation/visual assessment is the cognitive mapping technique promoted by urban planners such as Kevin Lynch (Lynch, 1960). Instead of having the respondent examine and respond to a photo of an urban environment, the respondent is asked to draw a photo (in aerial map form) of their

environment from memory noting a range of features. In doing so, the bias of the photograph frame is eliminated and a direct representation of the user's mental image is created (Evans, Smith, & Pezdek, 1982).

The use and analysis of Google Street View images has also rooted itself in the discipline of photojournalism. The unique viewpoint of the Street View camera offers random glimpses of life on the sidewalks upon which architectural photographers dare not venture and that no other database can match (Laurent, 2011; Smyth, 2010), though not without copyright and privacy questions.

In this regard, the analysis of Google Street View images becomes a form a visual ethnography, and to the extent reasonably inferable, even a form of sensory ethnography as the photo has the power to evoke sensations (Pink, 2007, 2008). This attribute goes to the present academic interest in phenomenological architecture espoused by practitioners such as Juhani Pallasmaa espousing the view that architecture ought appeal to all the senses and not merely the visual (Pallasmaa, 2012).

It is assumed that Google Street View images constitute a random sample of contemporary architectural time and place given that the artistic staging of images (so prevalent in architectural photography) is inherently precluded by Google Street View's scheduling methodology and protocol (Anguelov et al., 2010). Nonetheless, selection of the buildings to be examined via Google Street View images by an investigator could be prone to bias. Accordingly, a third-party atlas of contemporary architecture was used to limit the architectural projects included in the study to those selected by the Phaidon (Muir, 2004) publishing editorial team. That database was further limited in that only projects from the USA were incorporated into the study.

The collection of selected Google Street View images was not the actual data for the project but served as triggers and points of departure for dialogue.

The research questions include:

- Can aesthetic engagement with buildings be measured? Do people have the ability to discern and express the differences between buildings?
- Do laypeople have the vocabulary to describe the architectural world around them? If so, what is that vocabulary? What words do laypeople most commonly use to describe the positive attributes of buildings? The most negative attributes of buildings?
- Do contemporary buildings reliably communicate their primary social purpose – their use or function? If so, do laypeople tend to prefer those buildings?
- Do laypeople tend to respond more to the landscape/streetscape surrounding the building, or do they focus more on the building itself?
- Does the presence of people in an architectural image tend to increase or decrease preference for that image? Does the presence of cars/trucks have a similar effect?
- Does a clearly evident entry to a building correlate with preference? Or engagement?
- Does the condition of the streetscape tend to affect preference for a building?
- Does the transparency of a building facade tend to correlate with preference?
- Does the complexity of a building facade tend to correlate with preference?
- Do certain building material combinations tend to correlate with preference?
- Does preference tend to correlate with the desire to write-in a descriptive adjective?
- Does length of the building or width of the image tend to correlate with preference?
- Does a clear view of the building (i.e., no obstructions) tend to correlate with preference?

There is inherent value in this research because in equal parts contemporary architecture has never been systematically reviewed using Google Street View images; architecture is rarely reviewed from a transdisciplinary perspective; and

aesthetic engagement is a topic not to be found in architectural literature. Despite the foregoing, finding an audience may be made more difficult because the findings may not be positive. Limiting the frame of view to the sidewalk level (thereby eliminating skyline dynamics) may lead to the conclusion that very little effort has been made to communicate or engage, which may confirm architect Bruno Zevi's impression that:

> We are squandering a colossal heritage of expression because we shirk the responsibility of transcribing it and making it transmissible. It may not be long before we forget how to speak architecture at all. Indeed, those people who are designing and building today can barely mumble. They utter inarticulate meaningless sounds that carry no message. They do not know how to speak. They say nothing and have nothing to say (Zevi, 1978, 1).

Jane Jacobs' last work *Dark Age Ahead* begins with the sentence, "This is both a gloomy and hopeful book" (Jacobs, 2005, 3). "In North America we live in a graveyard of lost cultures, many of which were decisively finished off by mass amnesia in which even the memory of what was lost was also lost." While we may find that the street credibility of contemporary architecture is in a gloomy state, having no memory of what or how to narrate, we may also find that recognizing the situation is the beginning of a solution.

CHAPTER 2

LITERATURE REVIEW

In the broadest sense, this research is concerned with the quality of contemporary architecture, and more specifically, its quality at street level from a human perspective. The subject appears in the literature from time to time, most recently in *Quality Out of Control: Standards for Measuring Architecture* (Dutoit, Odgers, & Sharr, 2010, 1). "Formerly grounded in values of craftsmanship – in the skilled making of things quality is now associated with the management of administrative and technical processes." The situation is somewhat understandable given that building-making occurs within an ever tightening regulatory environment, using ever more sophisticated design and energy-modeling software, often with the goal of developing ever more convoluted overall architectural form (Ball, 2010). These factors tend to draw the practitioner's attention away from the relatively undefined and under-programmed task of relating to everyday non-stakeholder people where they will encounter and interact with buildings in the most personal way — on the sidewalk.

Background

"The evidence suggests that architects, or more precisely architectural culture, have tended to avoid engagement with social dynamics" (Jones, Petrescu, & Till, 2005, xiii). "The reasons for this are multiple but center on the way that the complexity and strength of social forces are seen to upset the purity of architectural values, conceived as they are on the false hope of redemption through material and aesthetic matter alone." Accordingly, contemporary architecture may suffer from a lack of interest in social dynamics and its street credibility, which can be defined as the convincing command and display of the style, fashion, and knowledge associated with urban counterculture and life on the street.

This research and review of the literature reframes contemporary architecture to street level and explore the dynamic social life of buildings. Jane Jacobs was the first contemporary writer to investigate these issues, though it was through the lens of her dissatisfaction with urban planning and redevelopment rather than a concern about buildings themselves. She was famously the little old lady in tennis shoes walking the sidewalks of New York looking, listening and learning. Possibly the single most important lesson she learned is that sidewalks are the essence of the city. "Streets and their sidewalks, the main public spaces of a city, are its most vital organs. If a city's streets look interesting, the city looks interesting; if they look dull, the city looks dull" (Jacobs, 1961b, 104). "Sidewalks, their bordering uses, and their users, are active participants in the drama of civilization versus barbarism in cities." In this research we will look at the contribution of contemporary architecture to the daily ballet of street and sidewalk.

Urbanization

Urban settlements currently house more than half the world's population and the trend toward urbanization is increasing. In 1955, 90 cities had populations in excess of one million. Forty years later there were 366. In 1955, only one city had a population of 10 million. Today there are 18 (Moore et al., 2003). The built environment is the dominant daily aesthetic experience for the majority of humans. Aesthetic experience, comprised of sensation and the experience of meanings, is how we make sense of the world (Berleant, 2010). Urbanization and the challenges associated with it place the physical and mental health of urban inhabitants at ever greater risk. Creating more humane urban cultural ecologies is one of the greatest challenges of our time. This research focuses on the role contemporary architecture currently plays at the human level, which by obvious axiom, is on the sidewalk, and

will attempt to answer this question: "to what extent does contemporary architecture at sidewalk level contribute to the sensory quality of the urban environment and to what extent does it contribute toward the experience of meaning?"

Assumptions

An important underlying assumption of this research is that buildings have agency with respect to human existence. Agency, in this regard, can be defined as the capacity for action or transformative capacity (Kocaballi, Gemeinboeck, Saunders, & Dong, 2011). From an agency point of view, buildings are non-human actors with the power to shape relational agency. Agency Sensitive Design (ASD) is an approach aimed at promoting awareness of the relational aspect of the human/building interface.

Another assumption of this research is that buildings can be designed and built, purposefully or inadvertently, to prevent or obstruct human/building relationships from forming and developing. To explore this phenomenon, artist Dan Graham created several installations in the 1970's which explored the use of panelized architecturally neutral materials, such as mirror glass, sheet metal, and polished granite, to block communication and disrupt relational agency potentially as a means of corporate socio/political control (Bishop, 2004).

A third assumption of this work is that reframing our view of contemporary architecture will be of help in defining the problem of architectural neutrality and its negative effect on agency more clearly. The notion that reframing a problem opens the door to innovative solutions has recently been explored in the book *InGenius* by Stanford University neurologist Tina Seelig (Seelig, 2012). The book's thesis centers on problem definition as the key to finding solutions and reframing as the key to unlocking innovation. Reframing, a term common to a number of disciplines including sociology and early behavioral psychology refers to establishing an alternative

viewpoint from which to examine a situation. Seelig writes that the classic example of reframing is the 1979 Eames movie *The Powers of Ten* in which the viewer's frame is shifted outward 10 times to the tenth degree (to a point beyond the galaxy) and then inwards 10 times to the tenth degree (to a point within an atom).

> This magnificent example reinforces the fact that you can look at every situation in the world from different angles, from close up, from far away, from upside down, and from behind. We are creating frames for what we see, hear, and experience all day long, and those frames both inform and limit what we think. In most cases, we don't even consider the frames – we just assume we are looking at the world with the proper set of lenses (Seelig, 2012, 2).

Photography

In the case of contemporary architecture, the set of lenses are usually owned by a professional photographer, hired by the architectural firm's marketing principal, whose task is to create an iconic image that shows the totality of the work in one glamorous image, probably in the hope of landing on a magazine cover. The key to creating such an image, at least for the past 100 years, has been to exclude people and their related artifacts from view. A famous case involved photographing houses designed by a group of architects known as The Whites in which the photographer went from house to house, removed all the owner's possessions, replaced them with architecturally correct furniture and features, took the photo, and then put everything back as it was (Robinson & Herschman, 1987). This tendency of the architectural photographers working for Modernist architects was noted in the early 1920's at the Bauhaus by students and faculty who complained that such photographs, excluding humans as they did, was the equivalent of modern murder and architectural genocide (Fiedler & Feierabend, 1999). This phenomenon fascinated a number of photographers at the time owing to the fact that the names of the creators tended to be more important than the men and women who occupied the buildings and had to live in them day in and day out. Bauhaus teacher Kurt

Schwitters pointed out that intrinsically harmonious (Modernist) space is from the outset inhuman since any human being entering this space would destroy the harmonious denominator.

Google Street View presents another type of architectural photography entirely. It started rather simply with Google founder Larry Page driving around San Francisco with a video camera pointed at building facades. "Google's mission is to organize the world's information and make it universally accessible and useful, and this type of street-level imagery contains a huge amount of information" (Anguelov et al., 2010, 32). The idea led to a collaboration with Stanford University called Cityblock, which soon thereafter became Google Street View. Since its inception Google Street View has captured imagery along roughly 50 million miles of roads and paths in 219 countries. Moreover, Google Street View cameras are presently fitted with laser range finders enabling the creation of panoramic 3D anaglyphs.

Environmental Analysis

The analysis of Google Street View images as a built environment data source first found traction in the public health arena. Public Health planners are tasked with understanding the current and future demand for public health services on a geographical neighborhood-by-neighborhood basis.

> The past decade has seen a rapid expansion of research on the health implications of neighborhood environment feature such as aesthetics, physical disorder, social activities, and pedestrian safety. Studies have found associations between specific neighborhood characteristics and cardiovascular disease, self-rated health, physical activity, obesity, lower-body functional limitations, symptoms of depression, anxiety, and conduct disorders, asthma, and crime and violence (Rundle et al., 2011, 94).

Prior to Google Street View, analysis of the built environment had been accomplished by canvassing neighborhoods with live surveyors who conducted household surveys and audits of the neighborhood built environment. Several studies have shown that audits conducted via Google Street View have a high correlation

with field audits. Wilson reported nearly perfect agreement among methods (Odgers, Caspi, Bates, Sampson, & Moffitt, 2012; Wilson & Kelly, 2011; Wilson et al., 2012).

In addition to informing public health studies (or at least making them more cost effective), Google Street View also stands to alter the landscape of photojournalism. The 2010 World Press Photo first prize went to German artist Michael Wolf who appropriated a Google Street View image of street life in an impoverished neighborhood and believes that a large part of our future will be the curating of all these (Google Street View) images (Laurent, 2011).

From both a public health and photo-documentary point of view, Google Street View has been a tool capable of revealing at least some truths of real life on the streets. In both cases an underlying purpose is to understand the psychology of the street; and in this case the psychology of the street insofar as it is mediated by contemporary architecture. Architectural psychology may be defined as that field within the discipline of applied psychology which deals directly with the response of people to designed environments (D. Philip, 2001). Early adherents shared a common orientation to person-environment interaction, which assumed a close causal relationship between the physical environment and individual behavior, and became known as architectural determinism. The opposing viewpoint became known as architectural free-will (Purcell, 1987). It's interesting to note that in Purcell's studies, photos of entire structures from afar were shown to respondents rather than intimate street-level images.

Social Science

The closely related field of architectural sociology examines the influence of the built environment on socio-cultural phenomena (Smith & Bugni, 2006). Much of the research conducted within architectural sociological circles is based on symbolic

interaction, which is one of the primary theoretical perspectives underpinning the larger field of sociology.

Architectural symbolic interaction suggests that buildings act as agents to shape our thoughts and actions; that buildings contain and communicate shared meanings and symbols; and that buildings and people find expressions of "self" in the other.

Much of sociology begins with concepts of self and proceeds to the analysis of interactions between various selves and communities. McCarthy made four propositions related to the effect of architecture on self: buildings are central in constituting and maintaining the self; buildings provide a stable and familiar environment; sensory input (touching, smelling, and so forth) is central to constructing and maintaining a sense of reality; and the relationship between self and buildings is primarily social (McCarthy, 1984).

Place attachment, based on nostalgic memories of experiences with a building and the expectation of positive future encounters, is an extension of the architectural symbolic interaction concept. However, much recent architecture is overly concentrated on the designers' personal identities rather than nurturing the selves of others (Day, 2004).

This goes to the concept that buildings have agency in the social environment, meaning that they are active players in the ongoing negotiation and interpretation of the symbolic environment. The study of this particular facet is known as architectural semiotics which focuses on the notion that buildings contain signs and codes which constitute a language (Eco, 1972). In so doing, buildings become collective representatives of the community's self or settlement identity.

Sociologists have also studied the built environment from a bit more pragmatic viewpoint. William Whyte endeavored to understand when, how, and why

people used open spaces in New York by studying their behavior using time-lapse documentary film (Whyte, 1980). The results were astounding to many and included humorous and mundane observations such as the fact that people will always adjust the position of a chair to suit their liking. In doing so, the (temporary) owner of the chair makes it theirs. It becomes their property, if only for a few minutes. It becomes a possession, and accordingly, it may fall within Belk's concept of possession and the self-extension concept (Belk, 1988).

Belk's general point is that possessions are a major contributor to and reflector of identity. "A key to understanding what possessions mean is recognizing that, knowingly or unknowingly, intentionally or unintentionally, we regard our possessions as parts of ourselves. Our fragile sense of self needs support, and this we get by having and possessing things because, to a large degree, we are what we have and possess" (Belk, 1988, 139). A question for research beyond the scope of this study is the extent to which the general public can come to possess a building or parts of a building and the degree to which buildings provide opportunities to enhance the self by extension.

A closely related topic is how people and buildings relate to one another within the context of an urban cultural ecology, which is the sphere or place where self-extension occurs at the human-building level. Traditional aesthetic theory held that "disinterestedness" was crucial to aesthetic appreciation, so it had difficulty explaining the stylistic innovations of artistic practices that flourished in the late 20th century. New materials and features were incorporated and audience participation became overt and necessary for the completion of art because the "traditional separation of the sequestered experience of art and the world of ordinary experience had been breached." Berleant proposed aesthetic engagement as an alternative to disinterestedness (Berleant, 2013, 3), which had been the dominant construct for

centuries. In place of contemplative psychological distance, "engagement stresses the continuity and interpenetration of perceiver and object."

Philosophy

Within the discipline of art history and criticism, aesthetic engagement has become known as relational aesthetics, wherein the central criteria for the success of a work of art is the degree to which a relationship is developed between the observer/participant and the work (Bourriaud et al., 2002). The site for such works is the social, rather than the institutional. "Relational art practices go by a variety of names: socially engaged art, community based art, experimental communities, dialogic art, participatory, interventionist, research-based, or collaborative art" (Bishop, 2005, 1). Art criticism also underwent a similar change in that the *process* of making art became more important than the final product. Judgments focused on the ethical rather than the aesthetic.

Moreover, the role of the artist was transformed from maker to curator and new concepts of authorship began to appear as artists became more distanced from the making of things in isolation. The modernist faith that art was a conversational exchange built into the experience of art was difficult to maintain owing to the insular nature of the art world. Only rarely were working-class men and women, men and women from non-Western countries, or young people — not to speak of women and those of color — welcomed into the debate (Jacob & Brenson, 1998). Even more challenging to the purpose, if not the soul of these institutions, is that many members of these audiences believe that, far from wanting to initiate conversations with them, modernism and museums are determined to leave them out. Curatorial practice, in which an artist or curator becomes the instigator and manager of a group of artists for the purpose of exploring a particular issue or conversation has been the institutional response.

To date there has been no equivalent in the practice of architecture, though it faces the same dilemma. Rather, participatory strategies have evolved in which stakeholders in a building such as employees, neighborhood activists, and design team members review the project at various stages and provide input to the design architect whose responsibility it is to collect and synthesize such data (Jones et al., 2005). However, despite the intention, the architect's role remains unchanged as the final decision maker and arbiter of taste. This is an extension of the early modernist conception of the role of the architect as outlined by Le Corbusier on the very first page of the book *Towards a New Architecture*:

> The Architect, by *his* arrangement of forms, realizes an order which is a pure creation of *his* spirit; by forms and shapes *he* affects our senses to an acute degree and provokes plastic emotions; by the relationships which *he* creates *he* wakes profound echoes in us, *he* gives us the measure of an order which we feel to be in accordance with that of our world, *he* determines the various movements of our heart and understanding; it is then we experience the sense of beauty [emphasis added] (Corbusier, 1931, 1).

Participation within such a construct is more akin to going through the motions than true collaboration.

Laypeople versus Practitioners

Another confounding factor is that architects tend to view the built environment in ways that conflict with those of laypeople. An example is a recent study in which a subject population of architects and laypeople were asked to rate 59 objective features of 42 large modern office buildings for emotional impact and global aesthetic quality. "Both groups strongly based their global assessments on elicited pleasure, but the 2 groups based their emotional assessments on almost entirely different sets of objective building features, which may help to explain why the aesthetic evaluations of architects and laypersons are virtually unrelated" (Gifford et al., 2000, 163).

In the USA, the public's dissatisfaction with contemporary architecture, famously summarized as, "never in history has so much money been spent on so many buildings that so many people detested" (Wolfe, 1981, 1) has attracted the attention of the National Endowment for the Arts and the General Services Administration both of whom adopted programs aimed at requiring architects to incorporate artists into the design process. Various percent-for-the-arts programs were enacted resulting in solutions that derisively became know as plop-art in which sculptures were forcibly inserted into the plazas at various Federal buildings sometimes resulting in lawsuits (Fernie, 2006). I can think of no great success and many bitter disappointments is a frequent comment.

Architectural Outcomes

The outcome of architectural projects rarely are studied with vigor and usually only by the popular press in the form of casual case studies. The most rigorous form is the Post-Occupancy Evaluation (POE) for which protocols are well developed. However, even the POE is rarely implemented. *Post-occupancy evaluation – where are you?* is a telling journal article charting the "40 years of continuing academic, professional, and commercial neglect of POE as a mainstream activity in the procurement of buildings" (Cooper, 2001, 158). One possible answer to the title question is that litigation is an unwanted but likely consequence of the critical scrutiny of building performance (Preiser & Nasar, 2007). Nonetheless, the call for POE and the development of standardized protocols for the performance of such studies continues, particularly in the healthcare segment where evidence-based design is gradually establishing a foothold (Carthey, 2006; Hadjri & Crozier, 2009).

Evidence-based healthcare design has a storied history extending back to Florence Nightingale. Her prescription for quality facilities has been empirically tested by a variety of researchers including Roger Ulrich, whose work brings full circle the

notion that the aesthetic quality of the built environment has public health outcomes and can be examined using a variety of techniques including photo-elicitation and visual assessment. A frequently cited study tested the hypothesis that hospital patients heal faster and require less medication if they have a window with a natural view versus a window with a view of another building (Ulrich, 1984).

The preference for nature has been examined extensively from both a psychological and philosophical point of view. Kaplan wrote that

> Preference is intimately tied to basic concerns, as an expression of underlying human needs. Preference can be expected to be greater for settings in which an organism is likely to thrive and diminished for those in which it may be harmed or rendered ineffective. Aesthetic reactions thus reflect neither a casual nor a trivial aspect of the human makeup. Rather, they appear to constitute a guide to human behavior that is both ancient and far-reaching" (R. Kaplan & Kaplan, 1989, 10).

A characteristic of the natural environment versus the built is that nature has a built-in narrative that proceeds in minutes and hours through sunrise and sunset which provides a much fuller range of perceptual experience (Berleant, 1986). In contrast, the built environment is static, and narrative, visual or otherwise, has been excluded to the greatest extent possible.

The issue of narrative is relevant in that several writers have reclassified humans as *homo narrans* – beings whose predominant feature is the ability to understand, create and use narrative. The ground for determining meaning, validity, reason, rationality, and truth must be a narrative context: history, culture, biography, and character (Fisher, 1985). If we are to reframe and evaluate contemporary architecture in terms of images depicting life on the street, then we must have a reasonable understanding of human environmental preference, which includes narrative. As Joseph Campbell writes in *The Power of Myth,* "When a story is in your mind, then you see its relevance to something happening in your own life. It

gives you perspective on what's happening to you" (Campbell, Moyers, & Flowers, 1988, 4).

Contemporary architecture places very little stock in the notion that architecture can or should present narrative, though a long tradition in architectural theory associates architecture with language.

> If architecture is a language analogous to text, then we can ask how buildings can be read. If it is analogous to speech, we can ask what architecture can say and not say. Who reads buildings and for what purpose? How does the language of architecture convey meaning? Can it actually express identity or society around it? Are there inherent limits to what architecture can say? If so, why are its possibilities limited? If a building says nothing, why is it mute? (Alofsin, 2008, 1).

Nonetheless, one purpose of this research is to verify that architecture actually has a speech impediment. This will be accomplished by gathering a selection of images in Google Street View at sidewalk level, and then exposing them to a respondent group to elicit reflexive consensus. A combination of techniques will be used that are fundamentally based in photo-elicitation and visual assessment.

Methods

Photo elicitation is a form of qualitative research "based on the simple idea of inserting a photograph into a research interview" (Harper, 2002, 13). It is particularly helpful in teasing out information, feelings and memories from respondents that may not come to mind based on textual interview questions alone. The technique evolved from a practical need to get a research team to agree on housing quality categories for a mental health study (Collier Jr, 1957). Based on that pre-data collection success, the research team incorporated the photos into interviews. In order to test the validity of the process, the team also conducted interviews with the same subjects and found the "photos sharpened the informants' memories and reduced the areas of misunderstanding" (Harper, 2002, 14). Moreover, the researchers reported that more comprehensive interviews could be

obtained and that interview fatigue was reduced, possibly because the position of authority within the interview dialogue is transferred more completely to the subject from the researcher. Another attribute of the photo-elicitation method is that it can jolt subjects into a new awareness of their social existence (Harper, 2002) by breaking the frame of things taken for granted and seeing the world from a new perspective.

While photo-elicitation has found its greatest acceptance by visual sociologists whose studies frequently published in the Journal of Visual Sociology, the method has also been employed in a number of urban planning and built environment studies. The visual assessment and scenic beauty estimation methods developed in early 1960's for evaluating the potential aesthetic impact proposed changes to a natural landscape environment are essentially the same method with a scorecard taking the place of an interview.

Another implementation of the method comes in the form of examining the built environment over time to assess how occupants gentrify dwellings in their own image (Suchar, 1988). This is a human trait that will be addressed earlier in this paper under the self-extension concept. "Photo-elicitation produces tangible stimuli for 'deep interviews', which produce 'thick' data and different types of information from other techniques" (Van Auken et al., 2010, 375). Likewise, photo elicitation has also been used for projects of much more limited scope, such as the evaluation of the consumptionscape (built environment and social interaction considered jointly) of a Starbucks in Beijing in which case the informants took the photographs themselves (Venkatraman & Nelson, 2008).

Visual assessment is a general line of inquiry and research aimed at predicting human preference for natural settings in experiential and statistical terms. As a field, it grew out of the environmental movement in the 1960's and was fueled

by steady funding from the USDA Forest Service in response to the demand for environmental impact studies. From the outset, a photo-elicitation type technique was employed. "Much of the way humans experience the environment is visual. An understanding of the experience of the environment thus requires visual material" (Rachel Kaplan, 1985, 165).

The overall procedure for conducting a visual assessment study is relatively straightforward: respondents are shown scenic photographs and asked to rate their overall preferences for each on a 1-5 Likert scale. Sub-questions, such as How pretty is the scene? are avoided because they correlate so highly with overall preference that such questions are essentially superfluous and tell more about the respondents' use of language than about their actual preference for the scene (S. Kaplan et al., 1972).

This notion was validated in a study that compared the use of closed and open-ended questions as well as informant responses to photographs versus actual site visits. The research team concluded that "site and slide presentations do not produce radically different aesthetic assessments" and "if closed-end questions are used, there is no particular advantage in using site visits" (Trent, Neumann, & Kvashny, 1987, 225).

Early work in visual assessment also considered factors other than simple scenic preference. One such study looked into the relative preference for urban versus natural scenes associated with the complexity versus the simplicity of those scenes. "The results indicate, first, that nature scenes are generally preferred over urban scenes, and, second, that complexity cannot account for this difference, even though higher complexity values are related to higher preference values within each group" (S. Kaplan et al., 1972, 354).

In addition to nature versus urban and simple versus complex explorations, cross-cultural studies have also generated significant results for preference and visual assessment researchers. These studies have generally taken the form of exposing informants from a variety of ethnic backgrounds to a series of photographs including images with and without human-built structures. Differences were found to exist and were attributed to familiarity with the types of landscapes depicted and to perception of images as a learned behavior (Rachel Kaplan & Herbert, 1987; E. H. Zube & Pitt, 1981). Acknowledgment of the differences may be of importance to the owners of sites that attract diverse visitors.

Informant age as a factor has also been considered. "Findings from the study indicate that young children do not rate landscapes differently from adults and that the ratings of older differ slightly from young and middle-aged adults" (Ervin H. Zube, Pitt, & Evans, 1983).

Other researchers have sought to validate the nature preference findings of visual assessment researchers by adopting a transactional perspective. This approach involves immersing informant groups in a variety of settings (walk in the park versus walk in a city versus reading a book at home) and then scoring their performance on a cognitive task such as proofreading (Hartig, 1993). The nature walkers always win.

Recent work has also been undertaken to determine if visual assessment studies conducted using internet survey techniques are as effective as traditional across the table researcher/informant techniques (Roth, 2006). Correlation rates tend to be very high but more work was suggested to factor in internet connection speeds, monitor type, the use of various internet image formats and the use of 3D computer generated models.

Another aspect of visual assessment to receive attention is the change in urban landscape design itself. Increasingly, landscapes are required to serve greater functional roles from sustainability, to pollution mitigation, and to ecological management points of view. Accordingly, the aesthetics of landscape design are changing which may or may not correlate well with user expectations or preferences. A study of one such example, the Hangzhon Flower Garden in Hangzhon, China, revealed a "strong indication that the respondents had different expectations of what a functional urban green space should be in terms of auditory, tactile, olfactory and visual quality, and general recreational needs" (Chen, Adimo, & Bao, 2009, 76).

Further, visual assessment has moved into the business of evaluating buildings themselves. Nasar provides a very complete review of the literature on the subject and uses his study of studies to conclude that humans evaluate building aesthetics along two distinct dimensions: formal and symbolic aesthetics (Nasar, 1994). Attributes of formal aesthetics are generally physical while the symbolic are generally related to content. In both cases complexity is a reliable predictor of preference. Nasar notes in his conclusion that visual assessment of environments is almost always conducted using static (still) images despite the fact that while buildings and landscapes are usually stationary, people are almost always moving. He followed up this hunch with a subsequent study comparing dynamic versus static displays of scenes (movies versus stills) concluding: "preference ratings were higher for static displays but preference ratings in the dynamic condition were more strongly correlated with a wider range of variables" (Heft & Nasar, 2000). The bulk of the visual assessment and photo-elicitation studies described above incorporate users of the place or space as respondents and the source of data.

Perhaps the most important line of inquiry related to the present study was that conducted by Hershberger at Arizona State University in the early 1970's

regarding the evaluation of architectural environments, their meaning and predicting user responses to buildings. Meaning is of considerable importance in perception, one of the most important determinants of human behavior, and is unquestionably involved with human feelings (Robert G Hershberger & Cass, 1974; Robert Glen Hershberger, 1969). Hershberger employed Osgood's semantic differential technique to explore attitudes toward architecture using students as the sample population.

CHAPTER 3

METHOD

This research was about buildings at sidewalk level. Buildings and sidewalks are sacred places. Buildings, because they embody the talents of communities and civilizations. Sidewalks, because they are the veins and arteries of human movement in the urban ecology. While people can experience the visual aspect of buildings any number of ways – books, photographs, on the internet, in movies, driving past them in cars and buses – they can only know the true and complete sensory experience of the building facade when they walk up to it on the sidewalk. It's the only place all the senses can be engaged.

Accordingly, if architects are sincere in their desire to create works to be experienced by the "eyes of the skin" as proposed by Pallasmaa, then the most important place on earth is the sidewalk. And for the urban planner, toiling at the task of balancing the myriad needs a modern city must fulfill, the sidewalk demands utmost attention because it is the one and only place a city can express real personal daily care for its citizens. While the person driving to a building seeking its bowels via the gaping mouth of a parking garage entrance has rights as well, they do not compare with those of the inherently sustainable sidewalk user.

This research was about the urban ecological niche of people and buildings at sidewalk level, and was comprised of two major pieces. The first was to gather images of contemporary buildings at sidewalk level. The second was to gather people's impressions of those buildings. The gathering of images carried a certain air of activism insofar as no such collection of images existed prior. The gathering of people's impressions about those images felt similar in that few attempts have been made since the flurry of environmental investigations that occurred in the late 1960's and early 1970's.

The method selected to pursue the answers to the research questions is a hybrid of the photo-elicitation, semantic differential and visual assessment described in the literature review above. In all three techniques, the general procedure involves the preparation of images for presentation to a subject population with the intent of gathering qualitative data regarding their impressions and/or reactions to the images presented, primarily through an exploration of human and architectural language usage. The semantic differential technique differs in that it also requires the preparation of adjective word lists for use in a survey instrument. The basic elements and workflow of the method are described below. Each step was a precursor to the next.

1. Preparation of the images.
2. Identification of the subject population and sample size.
3. Preparation of the adjective word list.
4. Administration of a survey instrument aimed at having respondents evaluate buildings using the word list.

Step 1. Preparation of the Images

This research was conceived as a hybrid of photo-elicitation and visual assessment techniques. Both procedures require the preparation of images to be exposed to respondents with the aim of eliciting responses and reactions that might reveal answers to the research questions. For this research, the necessary images depicted a representative sample of contemporary buildings in the USA built in the first decade of the 21st century.

More specifically, the images required for this research had to depict or represent the point of view of a person walking to work in an urban context. It was determined that Google Street View was the largest, most current, and most

accessible collection of such images. Competing image databases such as Microsoft Bing and Microsoft Street Slide were rejected as incomplete or not available. The senior program managers at Microsoft Street Slide were contacted but regretted they were unable to make the app (which would have been a significant improvement over Google Street View due to its built-in panorama composition feature) available for this research.

The selection of images of contemporary buildings for inclusion in this research was a preliminary concern for inadvertent bias. That potential was eliminated by selecting a peer-reviewed third-party generated list of contemporary buildings erected in the first decade of the 21st century, namely: *The Phaidon Atlas of 21st Century World Architecture*. While the atlas included hundreds of buildings from all over the world, only the USA section of the atlas was used for this research in order to limit the image database to a manageable size.

Step one in the development of the image database for this research was to extract the 85 buildings from the USA section of the table of contents of the book. Single family residences were excluded from the list, a reduction of 18 projects, as not germane to the investigation of street conditions in the urban context.

Second, the Google Street View component of Google Maps was employed to capture images of the selected buildings. Maps and Street View are free online services that enable users to use their computers, tablets, or phones to examine a photographic representation of the buildings along more than 2,000,000 miles of roadways thus far captured.

Figure 3-1. The Google Street View Car and Camera. Retrieved from http://www.themadisonrecord.com/2013/04/29/google-street-view-car-still-cruising-throughout-madison/

Google Maps was opened and the name or address of the desired building from the Phaidon Atlas typed into the search bar. This was sometimes easier said than done due to differences between Google and Phaidon Atlas name, reference, and/or geo-location of buildings. It was often necessary to look up the buildings using alternative search terms such as the architect's name or a colloquial name for the building, and on some occasions it was necessary to hunt for the building by panning around in the Google Maps satellite view. In several instances the process required several attempts because the Street View image was so markedly different than the book image (see Figures 1-1 and 1-2 above).

Once located in Google Maps, the next step was to drag the Street View icon (the "Pegman") from the Google Maps navigation bar to the street adjacent to the building. This action toggles Google Maps into Street View and changes to viewpoint from satellite to street imagery. This was not possible for all buildings because if the

Street View car has not passed by the building in question, there are no Street View images for it. Street View images were not available for eight of the buildings.

Once a building was located in Street View it was necessary to "grab" or "screen capture" one or more images of that building. Screen grabbing is the computer technique of taking a picture of whatever appears on one's computer monitor. For this research, the Street View images were grabbed on a 27" iMac using the command-shift-3 keystroke method of instructing the computer to grab the image and save it to a Portable Network Graphic (.png) file type.

Full portrait Street Views of a building facade with a single screen grab were possible on only the narrowest of buildings. The remainder required multiple screen grabs that were stitched together into a single panorama representing the complete building facade at street level. The procedure for grabbing multiple Street View images of a single building involved starting at the left end of the building, as viewed on screen, and working toward the right taking a screen shot with each successive click on the right arrow of the Street View navigation icons at the bottom of the screen. This procedure resulted in up to 20 images grabbed for the wider buildings, some of which spanned entire city blocks. The collection of screen grabs for each building was saved in individual folders named after each building.

It should be noted that during the screen grabbing process the pan/tilt function of Street View was adjusted so that the sidewalk and face of curb was visible along the bottom of the image wherever possible. This was done to give the building its street context, keep the view point as close to eye level as possible, and to keeps the images as consistently scaled as possible.

Once the screen grabbing process was complete it was necessary to "stitch" the files together in order to create a relatively seamless panoramic image representing the full length of the building. A number of software packages capable

of automating the process were tested and Photoshop Elements was selected because it could accept the .png files without intermediate translation to another file type and because the quality of the panorama output was superior. It was desired that the stitching process be automated in order to eliminate researcher bias in the creation of the panoramas.

The process for creating each panorama involved opening a new instance of Photoshop Elements, toggling it into panorama mode, loading the appropriate folder of screen grab images, clicking the stitch button, and waiting for the output. The output was a Photoshop file (.psd) which was exported to a Joint Photographic Experts Group (.jpeg) file type for actual use in the research.

A final step in the preparation of images was the removal of screen grabbing artifacts that remained at the perimeters of the image including the browser window frame and the Street View Navigation icons. The window frames were removed by cropping using Apple's Preview software. The Street View icons were obscured by copy/pasting a neighboring area of the image over the icon, also using Apple Preview. No other modifications to the images were performed.

Presentation of the final panoramic images proved to be an immediate challenge given the significant variation in image height and length. The smallest was approximately 10" x 24" at 72 dpi, while the largest was approximately 15" x 280" at the same resolution. A comparison is given below.

Figure 3-2. High Art Museum Panorama Made from 19 Street View Screen Grabs.

Figure 3-3. Louis Vuitton Store Captured in a Single Street View Image Screen Grab.

The images were identified by the given name of the building, e.g.: High Art Museum. The given name for two buildings was a street address. Some given names were more problematic in that their sponsors chose a word or words related to the underlying design concept, e.g.: "The Beehive," rather than indicating their use or location. A database was created to record relevant facts about each building and enable searching and/or sorting as required. Data entry fields in the database included Phaidon Atlas page number, architect's name, street address, building type, and a container field for the image of the building. Further, a visual database was created in the form of a poster depicting all the images of the buildings included in the research.

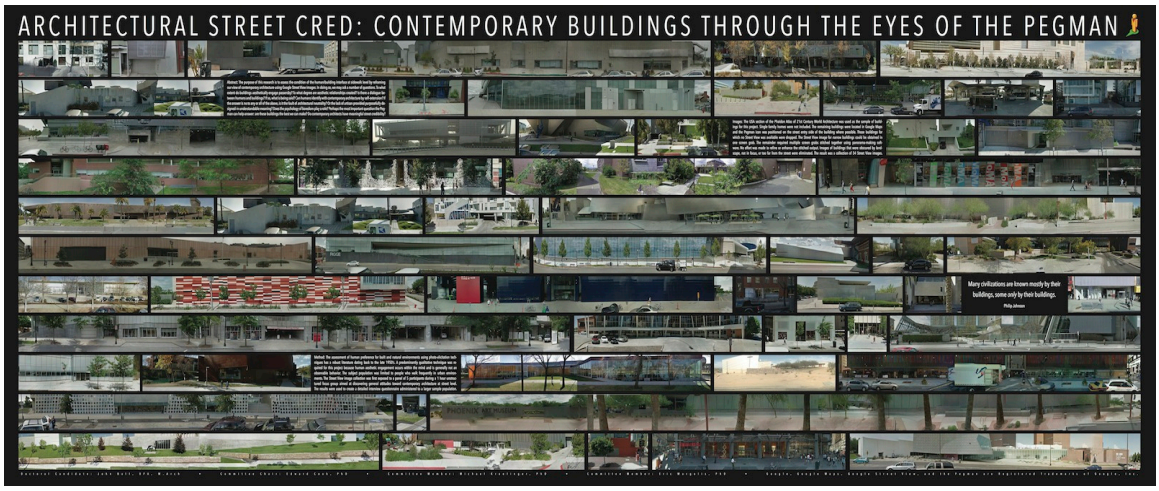

Figure 3-4. Visual Database of Images in Poster Form.

Step 2. Identification of the Subject Population and Sample Size

The purpose of this research has been to explore the relationship between humans and buildings in the urban context more fully, and in particular, at sidewalk level. Accordingly, the subject population was the subset of the general population that walks past buildings in urban areas on a frequent basis – a more diverse implementation of Jane Jacobs' personal walks around New York in her tennis shoes.

The Walkable Cities Movement of the past decade generated some studies and data of relevance to this project. The most comprehensive survey was commissioned by the America Walks Foundation with the help of a number of public health institutions including the American Heart Association. The National Walking Survey included a purposive sample of 7,019 individuals, and yielded the following relevant data:

- The tendency to walk correlates directly with population density. The higher the density the greater the number of people who walk.
- The age groups that walk the most are the young (18-24), followed by the old (65+). The middle aged group (25-64) walks the least with the propensity to walk decreasing as age increases.

- The young are overwhelmingly instrumental walkers (mainly for a specific destination such as school and work) while the old are instrumental and health walkers.

Based on the America Walks data it was determined that the subject population for this research would be the young (18-24) because they arguably have the most relevant experience with buildings at the sidewalk level.

Determination of sample size was determined by reviewing precedent photo-elicitation, visual assessment, and semantic differential studies that were focused on the evaluation of the built environment and where a statistical significance test had been performed. Groat's studies of architectural meaning employed 30 to 40 college students as subjects. Kaplan's studies of preference for natural environments ranged from 25 to 80 user respondents. Hershberger's studies, aimed at predicting user preference for building aesthetics, included sample sizes ranging from 26 to 120 college students.

Based on the precedent studies it was determined that a minimum sample size of 30 would be justifiable as a purposive sample. It was also determined that college students of a major university in an urban setting were an appropriate group from which to draw participants owing to their alignment with the America Walks data on age and population density dimensions.

The sample of college students was drawn from a class of 38 urban planning graduate students in the Arizona State University School of Geographical Sciences and Urban Planning. This group was selected because the undergraduate backgrounds of the students varied widely including the humanities, arts, and sciences.

Step 3. Preparation of the Word List

An adjective word list was required for the survey instrument used as the primary data collection means in this research. The use of semantic differential adjective word lists in photo-elicitation and visual assessment type surveys is well documented in literature dating back to the late 1960's. Hershberger was a strong proponent of the technique during his tenure as Dean of the College of Architecture at Arizona State University from 1968-1972. The basis for the technique was established by Osgood in the late 1950's (Osgood, 1957). While adjective lists from Hershberger, Osgood, and others could have been implemented directly for this research, it was determined that too much time had elapsed since their development and the present day. Accordingly, a procedure was developed along their original lines to create an adjective word list using a subject population of contemporary college students.

Two groups of seven graduate students were used. The first group was PhD students representing a variety of disciplines including architecture, art, and the sciences. The second was a group of masters degree students representing industrial, communications, architecture and landscape design. Both groups were enrolled in research methods courses.

The protocol for both groups was the same and the overall procedure required approximately 15 minutes.

1. Each group received a very short verbal instructional briefing by the researcher, with the visual database poster projected on a screen at the end of the classroom.
2. Each student was handed a single sheet of paper with a single question at the top and 10 fill-in-the-blank lines below. The question posed was "If

you passed by this building every day, how would it make you think or feel?"

3. A series of seven building images were then individually projected onto the screen and the students were given about three seconds to write a word, words, or short phrase in response to the question. The buildings were quasi-randomly sampled by using every 6th image from the alphabetically ordered image database.
4. After presentation of the 7th image, the student's papers were collected by the researcher. No identifying or demographic data was collected from the respondents.

Following administration of the word discovery survey, the results were examined with an eye toward finding commonalities in the words used by the respondents to describe how the building images made them think or feel. Two initial categories were immediately apparent: descriptive words that were positive and negative in nature.

Positive Words	Negative Words
Welcoming	Out-Dated
Interesting	Utilitarian
Unique	Imposing
Confident	Fussy
Natural	Pretentious
Stylish	Boring
Honest	Confusing

Table 3-1. Respondent Descriptive Words.

A thesaurus and dictionary were used by the researcher to verify and corroborate the common understanding of each term, and to look for etymological links that might indicate certain words had essentially the same root or underlying meaning. After multiple attempts and a period of reflection, two lists of seven words were produced that embodied the character of the positive and negative words used by the respondents in response to the images presented.

It should be noted that one change was made from the standard semantic differential method was made, namely, the words were not paired as bi-polar opposites. In the semantic differential technique, the word "welcoming" is typically paired with the word "forbidding" and the respondent is asked to rate an image on a scale between the two, for example:

Welcoming 2 1 0 1 2 Forbidding

The problem with the scale and technique as noted by Budd in regard to Himmelfarb's work is that the middle alternative on the scale (0) is an arbitrary neutral point that occurs frequently when respondent data is averaged but provides no insight (Budd, 1987). Accordingly, the variation on the technique employed for this research allowed for the positive and neutral word lists to stand alone thereby avoiding the lack of usefulness in the zero point.

Step 4. The Photo-Semantic Assessment Survey Instrument

The descriptive words generated during the prior phase of this research were used to facilitate the respondents' exploration of the images. Rather than having to form the words in their minds, they needed only to check those applicable off a list. This shortcut enabled respondents to review more images in a shorter period of time and also allowed for consistent recording and coding of the resultant data.

Validation of the descriptive words was made possible by including a respondent write-in option at the bottom of each word list. This enabled the respondent to provide a word of their own should the provided words did not fit their view or be to their liking.

The Photo-Semantic Assessment Survey was designed within the limitations of Survey Monkey and QuestionPro online software packages. Both generally operate on a page-by-page basis. Accordingly, one image was presented on each online page with three questions appearing immediately below the image. The first question on each page allowed the respondent to check off the positive attributes they might associate with the building. The second question allowed respondents to do the same with negative attributes. Both questions included the open write-in option.

A third question was included on each page in order to ascertain whether respondents could determine the function or use of the building by its street level appearance. The question was facilitated by the incorporation of a drop-down answer box. It included a list of all the building uses derived from the image database. The intent of the third question was to verify one of the simplest communication obligations of a building – its purpose.

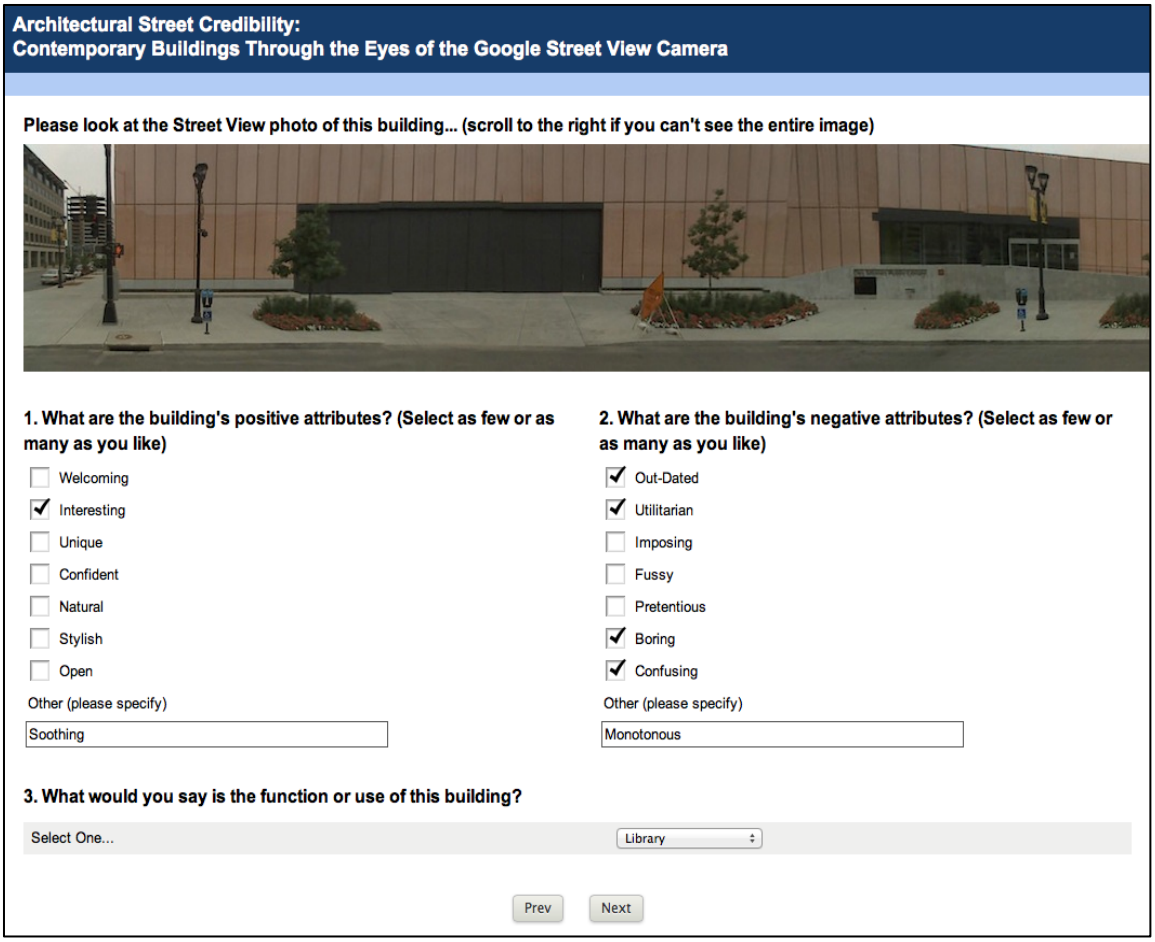

Figure 3-5. Photo Semantic Assessment Survey Instrument Sample Page.

The online survey question pages were bracketed by an instruction page on the front end, and a demographic information input page on the back end. At the bottom of each question page there appeared two navigation buttons which allowed the respondent to proceed to the next page or return to a previous page at will. Respondents were not prevented from altering prior answers in order to allow for the learning curve that takes place within the taking of survey instruments.

The survey instrument was administered to 62 graduate students over a period of 30 days. Students were selected as the subject population because they fit the profile of people who frequently walk past urban buildings and because of their availability. No

attempt was made to establish a statistically significant sample size. Rather the goal was to obtain a reasonably large but workable sample. Limited demographic data was collected from the respondents on the final page of the survey.

The data were recorded automatically by the online survey provider on its servers and subsequently downloaded as a Microsoft Excel spreadsheet for analysis. Prior to downloading the data, several forms were created to facilitate the analysis. The basic structure for the data was organized on a building-by-building basis using a scoring sheet. It included the possible responses for the three questions and a container field for the descriptive words written-in by respondents. A thumbnail image of the building was included to facilitate easy recognition by the researcher.

Questions 1 and 2 were structured such that checking the box, or writing in a word, yielded a score of 1 point and not checking yielded a score of 0 points. This was done so that a tally of word usage could be generated. It also allowed a means by which individual buildings could be scored insofar as respondents recorded impressions via the questions. The data analysis form also included a space for display of the write-in words respondents provided. See Figure 3-6 above for a sample building data score sheet.

Word Attribution Survey Respondent Data

Positive Attributes

Attribute	Clicks	%age
Welcoming	26	9%
Interesting	44	16%
Unique	44	16%
Confident	21	7%
Natural	10	4%
Stylish	38	13%
Honest	38	13%
*Other (Specify)**	1	0%
Positive:	**222**	**78%**

*Inviting

Negative Attributes

Attribute	Clicks	%age
Out-Dated	1	0%
Utilitarian	3	1%
Imposing	12	4%
Fussy	11	4%
Pretentious	12	4%
Boring	2	1%
Confusing	19	7%
*Other (Specify)**	1	0%
Negative:	**61**	**22%**

*Bare

Net Attribution Score: **161**
Total Attributions: **283**

Use Identification Survey Respondent Data

Building Use/Function

Function	Clicks	%age
Offices	4	6.78%
Worship	2	3.39%
Dormitory	1	1.69%
Aquarium	2	3.39%
Museum	25	42.37%
Theater	11	18.64%
Apt/Condo	1	1.69%
Concert Hall	8	13.56%
Classrooms	1	1.69%
Youth Center	1	1.69%
Library	3	5.08%

Actual: Offices **Correct: 6.78%**

Thumbnail: (See Appendix X for Complete Image)

Image Analysis Summary (Based on Complete Image)

			Rank
% Nature:	6.44%	Building Transparency:	6
% Building:	69.23%	Visibilty of Entry:	6
% Street/Sidewalk:	11.85%	Facade Complexity:	1
# of People in Image:	12	Street/Sidewalk Condition:	2
# Cars/Trucks in Image:	1	Apparent Weather:	Excellent
% Building Obstructed:	9.26%	Predominant Building Materials Used:	Storefront
		Secondary Building Materials Used:	Metal Panels

Image Catalog Information

Phaidon Atlas Page No.:	633	Year Built:	2007
Building Name:	San Francisco Federal Building	Architect:	Morphosis
# of Screen Grabs:	10	Architect Location:	Los Angeles
Image Size in Pixels:	6875 x 888	Building Geo Locator:	37.7788, -122.4110
Image Size in MB:	1.5	Building City:	San Francisco

Figure 3-6. Example Photo-Semantic Assessment Building Data Score Sheet.

CHAPTER 4

RESULTS

The purpose of this chapter is to present the data collected for this research and answer, to the extent possible, the research questions posed in the introduction to this dissertation. The research questions include:

- Can aesthetic engagement with buildings be measured? Do people have the ability to discern and express the differences between buildings?
- Do laypeople have the vocabulary to describe the architectural world around them? If so, what is that vocabulary? What words do laypeople most commonly use to describe the positive attributes of buildings? The most negative attributes of buildings?
- Do contemporary buildings reliably communicate their primary social purpose – their use or function? If so, do laypeople tend to prefer those buildings?
- Do laypeople tend to respond more to the landscape/streetscape surrounding the building, or do they focus more on the building itself?
- Does the presence of people in an architectural image tend to increase or decrease preference for that image? Does the presence of cars/trucks have a similar effect?
- Does a clearly evident entry to a building correlate with preference? Or engagement?
- Does the condition of the streetscape tend to affect preference for a building?
- Does the transparency of a building facade tend to correlate with preference?
- Does the complexity of a building facade tend to correlate with preference?
- Do certain building material combinations tend to correlate with preference?
- Does preference tend to correlate with the desire to write-in a descriptive adjective?
- Does length of the building or width of the image tend to correlate with preference?
- Does a clear view of the building (i.e., no obstructions) tend to correlate with preference?

The data that has been gathered will be presented on a question by question basis. However, first we'll begin with a recap of the methods employed to gather the

data, followed by an overview of the results. Then we'll approach the questions one by one.

Recap of Methods Used

Three general categories of data were collected for this research: Street View images, architectural adjectives, and respondent reaction to Street View images using the architectural adjectives. The first two (Street View images and architectural adjectives) were collected specifically to elicit respondent reactions, thereby creating the third group of data.

The Street View images of contemporary buildings were created by montaging screen grabs of Google Street Views of buildings into panoramic slides. The buildings themselves were selected by using every fourth image from a group of 54 that met selection requirements described in the methods chapter. The 11 final images were subjected to a content analysis by the investigator. The starting point was the USA section of The Phaidon Atlas of 21st Century World Architecture.

Lists of architectural adjectives were collected by exposing two groups of seven Arizona State University graduate students enrolled in research methods classes (N = 14) subjects to a sampling of the 54 Street View images and having them write down single word impressions of the images displayed. Their 179 handwritten responses were later tallied into a comprehensive list and each adjective was categorized as positive, neutral, or negative. The full list of adjectives was synthesized down to seven positive and seven negative adjectives for inclusion in the survey instrument by examining the list for commonalities and themes.

The goal of the first two data collections was to enable creation of a photo-semantic survey assessment instrument aimed at answering the research questions. The survey instrument, conducted both online and on-paper, presented a Street View image and the two lists of attributes on a single page. The respondent viewed the

Street View image and then clicked or checked off the adjective s/he felt most appropriate. Respondents could also write-in an adjective if desired. Lastly, at the bottom of each page respondents were asked to identify the use or function of the building from a pre-defined list of possibilities.

The photo-semantic survey instrument was administered to 62 graduate students in urban planning, urban design, and landscape architecture classes at Arizona State University. Seventeen of the students took the survey online. The remaining 45 used a paper version printed from the online form. The response rate was 15% when students were presented with the project and asked to self-administer the survey online outside of class. The response rate was 100% when students were administered a paper form of the survey instrument during class in the presence of the investigator and their professor. See Appendix A for the survey instrument.

In order to simplify data management, the survey responses recorded on the paper forms was manually transferred into the online system by the investigator. The combined data was then exported from the online system to a spreadsheet for organization and analysis. See Appendix B for the resulting raw data spreadsheet.

The 11 individual building data tally sheets were then inserted into the spreadsheet and linked to the appropriate cells in the raw data so they would populate automatically. It was not possible to automate the transfer of respondent write-in positive and negative adjectives making it necessary to enter them manually on the tally sheet. It was also not possible to automate determining whether the respondents' answers to the building use identification answer was correct making it necessary to transfer the percentage value from the tally to the summary line. See Appendix C for the 11 building data tally sheets.

A summary spreadsheet was created to display the results of the 11 building tally sheets onto a single page, and also to make possible the calculation of mean data scores for all the buildings and to perform correlation analyses on rank ordered data. In particular, the net clicks rank indicator was compared with several factors. The summary sheet is given in Figure 4.1. In addition, a spreadsheet was prepared to allow comparison of the three highest scoring and three lowest scoring buildings based on preference. The comparison sheet is given in Figure X.

The availability of rank ordered data from the survey instrument and building image analyses made it possible to run a number of correlational tests on pairs of rankings. The purpose was not to prove that correlations exist but rather to identify factors that might warrant further study in relation to each other.

Spearman's Rho correlation coefficients were calculated within the master data tally spreadsheet using the built in =correl(array1:array2) function, which incorporates the form

$$Correl(X,Y) = \frac{\sum (x-\bar{x})(y-\bar{y})}{\sqrt{\sum (x-\bar{x})^2 \sum (y-\bar{y})^2}}$$

Correlation absolute values between 0.7 and 1.0 are considered strong and highly linear. Correlation absolute values between 0.3 and 0.7 are considered moderate. Correlation absolute values between 0.0 and 0.3 are considered weak or non-linear.

As described in the introduction to this chapter, we'll take each research question in order and examine how the data might provide an answer. For ease of use, we'll restate each question as we go.

Aesthetic Engagement and Building Preference

Can aesthetic engagement be measured? Do people have the ability to discern and express differences between buildings?

The assumption underlying this question is that people can and must engage with the built environment around them on an aesthetic basis. In order to engage, people must be able to discern the differences between buildings and be able to articulate those differences in some fashion. The purpose of the photo-semantic survey instrument was to test the ability of respondents to discern the differences between buildings and express that discernment by clicking or checking descriptive words representing their impression or judgment, and thereby their aesthetic engagement. In this regard we are building on Kaplan's visual assessment and Osgood's semantic differential work to conclude that use of positive descriptors indicates a preference for something and negative descriptors the opposite. Indication of preference either way therefore indicates engagement.

The data relevant to this question are given by the net clicks line on the building tally and summary sheets. Net clicks are the sum of total positive attribute clicks minus total negative attribute clicks. In simplest terms, if a respondent clicked on more positive adjectives than negative, the building got a positive net click score. If a respondent clicked on more negative than positive, the building got a more negative score.

The data for net clicks are given in Figure 4-1. The lowest scoring building received a net click score of -64 while the highest score was 161 clicks. A mean of 3.5 clicks per respondent per building was recorded. The buildings were rank ordered in terms of net clicks in order to make possible a variety of correlational analyses described below. The rank order of the buildings is also given in Figure 4-2.

Building Thumbnail:												
Building Name:	40 Bond St.	Akron Art	Cal. Fndtn	Denver Art	Figge Art	Hobby Perf.	McCormick	New Museum	Perry Apts.	Pulitzer	SF Fed. Bldg	
Building No. on Survey:	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	
Survey Data												**Mean**
Positive Clicks:	153	102	112	158	62	82	158	58	85	63	222	114
Negative Clicks:	95	115	84	87	126	111	72	115	96	149	61	101
Total Clicks:	248	217	196	245	188	193	230	173	181	212	283	215
Net Clicks:	58	-13	28	71	-64	-29	86	-57	-11	-86	161	13
Correct Use ID:	32.79%	40.98%	9.84%	38.98%	5.00%	6.67%	35.00%	35.59%	71.67%	33.33%	6.78%	28.78%
Rank on Net Clicks:	**4**	**7**	**5**	**3**	**10**	**8**	**2**	**9**	**6**	**11**	**1**	N/A
Image Analysis Data												
% Nature:	6.72%	9.64%	9.72%	7.93%	8.45%	2.63%	25.19%	0.00%	5.62%	25.51%	6.44%	9.80%
% Building:	66.22%	48.80%	37.50%	41.85%	73.52%	63.16%	60.00%	58.33%	75.84%	33.67%	69.23%	57.10%
% Street/Sidewalk:	4.80%	7.23%	25.46%	6.61%	19.72%	36.84%	3.70%	41.03%	14.04%	17.86%	11.85%	17.19%
# of People:	6	0	0	4	3	0	1	5	0	0	12	3
# of Cars:	0	1	0	1	4	5	0	0	3	9	1	2
% Obstructed:	21.23%	0.00%	24.30%	5.94%	0.76%	2.04%	6.36%	1.09%	2.17%	12.00%	9.26%	7.74%
Image Analysis Rankings												**Rho (Net)**
Rank on Use ID:	7	2	8	3	11	10	5	4	1	6	9	0.11
Rank on Write-Ins:	6	1	7	8	2	4	4	9.5	9.5	4	11	**-0.45**
Rank on % Nature:	7	4	3	6	5	10	2	11	9	1	8	-0.01
Rank on % Bldg:	8	4	2	3	10	7	6	5	11	1	9	-0.16
Rank on % Street:	2	4	9	3	8	10	1	11	6	7	5	**0.66**
Rank % Obstructed:	10	1	11	6	2	4	7	3	5	9	8	**-0.42**
Transparency Rank:	5	10	9	8	7	4	2	1	3	11	6	0.21
Entry Visibility Rank:	4	10	8	9	7	2	3	1	5	11	6	0.14
Complextity Rank:	2	8	6	3	9	4	7	11	5	10	1	**0.75**
Street Quality Rank:	3	4	11	5	9	10	1	6	8	7	2	**0.61**
Image Width:	4	9	8	6	3	5	2	11	10	7	1	**0.47**
Miscellaneous Factors												
Weather:	Excellent	Excellent	Excellent	Excellent	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
Materials 1:	Metal Grill	Metal Panels	Concrete	Metal Panel	Storefront	Storefront	Storefront	Storefront	Storefront	Concrete	Storefront	
Materials 2:	Storefront	None	Metal Panel	Storefront	Concrete	Metal Panels	Metal Panels	Metal Grill	Metal Panel	None	Metal Panels	**Mean**
# of Screen Grabs:	5	5	3	6	10	8	7	2	2	5	10	5.73
Image Size (MB):	2.80	0.42	1.10	0.82	1.30	1.80	2.50	1.00	0.65	0.58	1.50	1.31
Designer Location:	Basel	Vienna	Los Angeles	New York	London	New York	Rotterdam	Tokyo	New York	Osaka	Los Angeles	
Building Location:	New York	Akron	Los Angeles	Denver	Davenport	Houston	Chicago	New York	New York	St. Louis	San Francisco	

Figure 4-1. Summary of Building Data Tally Sheets and Rankings

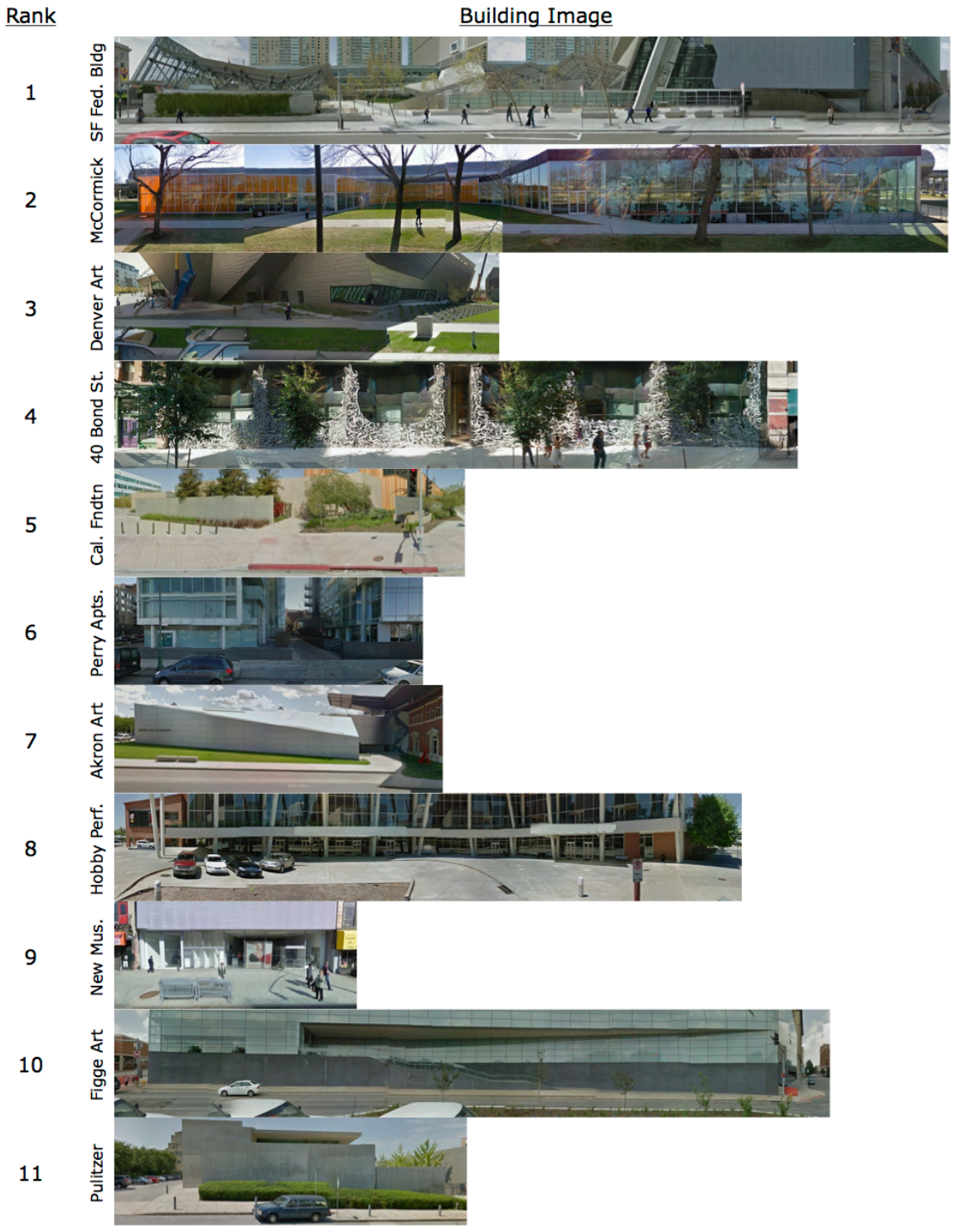

Figure 4-2. Rank Order of Building Preference on Net Clicks (1= Highest)

Respondent Vocabulary of the Built Environment

Do laypeople have the vocabulary to describe the architectural world around them? If so, what is that vocabulary? What words do laypeople most commonly use to describe the positive attributes of buildings? The most negative attributes of buildings?

The capture of data relevant to this question was obtained in two ways. First there were the two groups of seven graduate students (N = 14) that provided hand-written words in response to a random subset of the 54 Street View images. Second, there was the larger group (N = 62) of graduate students that took the photo-semantic survey and not only clicked on words in response to images but also had the opportunity to write-in words if they found the synthesized list of seven positive and seven negative words lacking.

In the word generation phase, the respondents provided 179 adjectives that were later transcribed into a comprehensive list and categorized as positive, neutral, or negative. While a great many of the words provided by the respondents were unique, some words were used more often.

Postive 58 Words	Good Scale	Nice Color
Active	Happy	Open
Artistic	Happy	Organized
Blends	Happy	Out-of-the-Box
Clean	Honest	Playful
Colorful	Honest	Popular
Comforting	Imaginative	Sensitive
Comprehensive	Interested	Smart
Creative	Interesting	Smart
Creative	Interesting	Strong
Cultivated	Interesting	Stylish
Cultural	Level-Headed	Stylish
Dignified	Modest	Sustainable
Elegant	Mysterious	Timeless
Engaging	Mystery	Transparent
Engaging	Natural	Transparent
Enthusiastic	Natural	Welcoming
Family-Centered	Nature	Welcoming
Friendly	Nice	Welcoming
Fun	Nice	

Neutral 47 Words
Aerodynamic
Affordable
Artsy
Artsy
Big
Bold
Bold
Bold
Busy
Contemporary
Crowded
Designed
Emotional
Enclosed
Exhibition
Futuristic
Grey
Grey
Japanese
Layered
Modern
Modern
Modernism
Okay
Orderly
Orderly
Pop-Art-Ish
Predictable
Private
Private
Private
Prudent
Quiet
Regional
Repetitive
Residential
Rustic
Simple
Simple
Simple
Technological
Unusual
Unusual
Upright
Utilitarian
Visible
Visible

Negative 74 Words
Afraid
Basic
Bureaucratic
Belittle-ing
Blah
Bombed-Out
Boring
Boring
Boring
Clinical
Close-Minded
Closed
Cold
Cold
Cold
Compromised
Confused
Constricted
Dangerous
Defensive
Discombobulated
Exclusionary
Exclusionary
Feel Bad
Fortification
Fortified
Fortress-Like
Goofy
Guarded
Harsh
Hot-in-Summer
Inconsistent
Indifferent
Isolated
Meaningless
Messy
Messy
Monotone
No Good
Normal
Not Good
Not Welcoming
Not Welcoming
Not-so-Good
Off-Balanced
Official
Out of Scale
Out-Dated
Out-Dated Modern
Over-Powering
Overwhelmed
Plain
Pretentious
Pretentious
Rigid
Same-Old
Secret
Secretive
Security
Self-Important
Semi-Connected
Severe
Shielded
Stay-Out
Sterile
Stiff
Stubborn
Trapped
Underwhelmed
Unfriendly
Uninteresting
Uninteresting
Uninviting
Yuck

Table 4-1. List of Architectural Adjectives Provided by Student Respondents.

The second phase of the study regarding vocabulary occurred during the administration of the photo-semantic survey instrument which asked respondents to examine a Street View image and then click or check boxes next to seven positive or seven negative adjectives. The list of adjectives used in the survey instrument had been synthesized from the list given in Table 4.1.

On average, respondents made 1.8 positive and 1.6 negative clicks per image. Positive adjectives were clicked 1,226 times and written in 29 times for a total of 1,255. Negative words were clicked 1,048 times and written in 63 times for a total of 1,111. All the adjectives were clicked multiple times. The most frequently clicked positive and negative terms were "interesting" and "boring." The least used were "natural" and "fussy." Table 4.2 gives the click frequency data by attribute.

Positive Attribute	Clicks	Negative Attribute	Clicks
Welcoming	126	Out-Dated	108
Interesting	**249**	Utilitarian	140
Unique	212	Imposing	150
Confident	148	Fussy	70
Natural	92	Pretentious	109
Stylish	211	**Boring**	**255**
Honest	188	Confusing	216
*Other (Specify)**	29	*Other (Specify)**	63
Positive:	**1,255**	**Negative:**	**1,111**

Table 4-2. Respondent Attribute Clicks.

In addition, respondents had the opportunity to write-in (via keyboard for those respondents taking the survey online and by hand for those using the paper form) positive or negative adjectives at their discretion.

While respondents clicked the provided adjectives almost equally (1226 to 1048), they wrote-in negative words more than twice as often (63 times versus 29 times) as they wrote-in positive words. Further, a single negative word

Positive Write-In Words	Tally
Flashy	1
Airy	1
Crafted	1
Fancy	1
Refreshing	1
Minimalist	3
Sharp	1
Modern	2
Clean	1
Sidewalk Accessible	1
Landscaping	1
Transparent	1
Conventional	1
Simple	2
Unfinished	1
Repetitive	1
Typical	1
Flamboyant	1
Structured	1
Tidy	1
Street Level	1
Sleek	1
Hermetic	1
Dramatic	1
Inviting	1
Total No. of Write-Ins:	29
No. of Words Used:	25

Negative Write-In Words	Tally
Singular Strings	1
Strange	1
Opaque	1
Blocking Entrance	1
Closed Off	2
Simple	1
Monumental	1
Unwelcoming	**15**
Plain	5
Awesome	1
Stark	1
Secretive	1
Bold	1
Messy	1
Hard-Edged	1
Concrete	1
Moat	1
Weird	1
Terrible Entrance	1
Formidable	1
Amalgamation	1
Striking	1
Somber	1
Poor Streetscape	1
Bleh	1
Block	1
Fortress	1
Repetitive	1
Hardscape	3
Ugly	1
No Plants	1
Structural	1
Busy	1
Shiny	1
Flat	1
Light	1
Typical	1
Looming	1
Uninviting	2
Hidden	1
Bare	1
Total No. of Write-Ins:	63
No. of Words Used:	41

Table 4-3. Adjectives Written-In by Respondents

"unwelcoming" was written-in 15 times. The word "plain" was written-in five times. On the positive side, only a few words were written-in multiple times with the word "minimalist" scoring highest at three uses.

Only three times did respondents click all seven positive or all seven negative attributes. One respondent clicked all seven positive attributes for Building 11, the most preferred building, and two respondents clicked all seven negative attributes for Building 10, the least preferred building.

Respondent Perception of Building Use or Function

Do contemporary buildings reliably communicate their primary social purpose – their use or function? If so, do laypeople tend to prefer those buildings?

The data related to this question was obtained with the photo-semantic survey instrument. In addition to respondents being asked to associate adjectives with each image, they were also asked to identify the use or function of the building depicted in the image by selecting one use from a list of 11 possible answers. The list of 11 included all the building types found in the complete set of 54 Street Views.

On average, respondents correctly identified the use of the building 28.8% of the time, with a low of 5.0% for building 5 (an art museum) and a high of 71.7% for an apartment building.

The correlation coefficient for building preference and correct use identification was 0.11, indicating no linear relationship. A case in point is the most preferred building, which had correct use identification rate of only 6.78%. Moreover, the data from the comparison of the three most and the three least preferred buildings show nearly identical use identification rate of 26.92% and 24.64% respectively.

The Effect of Streetscape on Respondent Building Preference

Do people tend to respond more to the landscape/streetscape surrounding the building, or do they focus more on the building itself? Does the condition of the streetscape tend to affect preference for a building? The intent of this question was to separate the building from its surroundings and compare the two in terms of preference. The data came from a correlation analysis between ranked overall building preference and the ranking of image area from most to least nature/landscape expressed.

The first assumption underlying this question was that if an image depicted a high percentage of nature it might affect preference for the building. The data show a correlation coefficient of 0.11 indicating no linear relationship. This was based on ranked building preference compared with the ranked percentage of nature in the image.

A second assumption was that if an image depicted a high percentage of street and sidewalk it might affect preference for the building. The data show a correlation coefficient of 0.66, which is at the top of the moderate range in correlational analysis. This was based on building preference compared with percentage of street and sidewalk in the image with a ranking of least (1) to most (11).

A third assumption underlying this question was that the quality of the overall condition of the streetscape might affect building preference. It was observed during the making of the streetscape panoramas that the quality of streets, medians, sidewalks, and related landscape in terms of condition, maintenance, and cleanliness varies widely. The gamut runs from broken, cracked, vandalized concrete with trash and debris strewn out amongst dead landscape materials to streetscape that are quite beautiful and well-maintained.

For this data point, the images were rank ordered in terms of streetscape quality from best (1) to worst (11) and compared to rank ordered building preference. The correlation coefficient was 0.61 which is on the high side of the moderate range.

The Effect of Building Entry Visibility on Respondent Building Preference

Does a clearly evident entry to a building correlate with preference?

It was assumed that being able to easily identify the building entrance might affect respondent building preference. In some of the images the entrance was plainly visible while in others it was completely hidden.

For this question the images were rank ordered from most to least visibility of the entry and compared with building preference. The correlation coefficient of 0.14 was low, indicating no linear relationship.

The Effect of Facade Transparency on Preference for Buildings

Does the transparency of a building facade tend to correlate with preference?

The purpose of this question was to begin an investigation of the politics of architectural neutrality, one aspect of which is the assumption that reflective and non-transparent facades tend to be off-putting and diminish aesthetic engagement. Further, it was observed during the making of the Street View images that facades range from fully transparent glass with few apparent reflections to solid, blank, full height concrete walls.

To address this question, the images were sorted from most transparent to least and the rank order compared with the rank order of building preference. The correlation coefficient in the middle of the weak range indicating little linear relationship could be observed.

The Effect of Facade Complexity on Respondent Building Preference

Does the complexity of a building facade tend to correlate with preference?

In the visual assessment studies conducted by Kaplan and others, landscape preference was often associated with the complexity of the image; the greater the complexity, the greater the preference. The assumption underlying the question in this study is that the same correlation exists. To find the answer, the images were rank ordered from most complex to least and compared with rank ordered building preference. The correlational analysis gave a coefficient of 0.75 which is at the low end of the strong range indicating a clear linear relationship.

The Effect of Building Materials on Preference for Buildings

Do certain building material combinations tend to correlate with preference?

It was observed during the preparation of the Street View images that the vast bulk of building facades included in the Phaidon Atlas are of aluminum, storefront glass, and metal panel construction. Concrete appears minimally and stone is virtually unused. The sample of 11 buildings used in the photo-semantic survey reflected that distribution. Accordingly, it was not possible to obtain data that might answer the question because virtually all the buildings were of storefront variety.

Building Preference and Write-In Adjectives

Does preference tend to correlate with the desire to write-in a descriptive adjective?

It was not possible to perform a correlation analysis on the write-in count data because it could not be rank ordered owing to several buildings receiving identical scores. However, the range of write-in counts examined which ran from a high of 18 write-ins for Building 2, to a low of two write-ins for Building 11.

Interestingly, Building 2 ranked fairly low on preference while Building 11 ranked highest for preference. While it might be tempting to conclude a correlation exists, in the comparison of the three least and most preferred buildings, the

aggregate number of write-ins for each group were very close at 27 and 25 respectively.

The Effect of Building Size of Respondent Preference

Does length of the building or width of the image tend to correlate with preference or engagement?

The assumption underlying this question was that the larger the building the more impressive or engaging it might be and the data prove that out to a certain extent with a correlation of 0.47 in the middle of the moderate range, demonstrating a linear relationship. This data was obtained by performing a correlation test between rank ordered building preference with rank ordered image width.

The Effect of View Obstructions on Building Preference

Does a clear view of the building (i.e., no obstructions) tend to correlate with preference or engagement?

It was observed during the preparation of the Street View panoramas that the view of most buildings was obstructed in some way by cars, trucks, trees, signs, and even by people to a certain extent. In fact, some of the buildings in the Phaidon Atlas were completely obscured by landscape or trucks and accordingly weren't included in the final group of 54 at all.

In order to obtain a data point related to this question, the building image area was calculated for each, followed by calculating the net area the building view was obstructed expressed as a percentage. The buildings were then rank ordered on obstruction percentage and a correlation test with building preference was performed.

Interestingly, an inverse correlation of -0.42 was found indicating that a moderate linear relationship exists and that obstruction of the building view is associated with preference for a building.

Results of High/Low Building Preference Comparison and Conclusion

The final means of investigating respondent preference for contemporary buildings was to compare the three lowest net click ranking buildings with the three buildings that received the most net clicks. The data for this comparison is given in Table 4.4. Mean scores for the two groups of buildings are given in Table 4.5.

	The **Least** Preferred Buildings			The **Most** Preferred Buildings		
Building:	Pulitzer **10**	Figge Art **5**	New Museum **8**	Denver Art **4**	McCormick **7**	SF Fed. Bldg **11**
Positive Clicks:	63	62	58	158	158	222
Negative Clicks:	149	126	115	87	72	61
Total Clicks:	212	188	173	245	230	283
Net Clicks:	-86	-64	-57	71	86	161
Correct Use ID:	33.33%	5.00%	35.59%	38.98%	35.00%	6.78%
% Nature:	25.51%	8.45%	0.00%	7.93%	25.19%	6.44%
% Building:	33.67%	73.52 %	58.33%	41.85%	60.00%	69.23%
% Street and Sidewalk:	17.86%	19.72 %	41.03%	6.61%	3.70%	11.85%
# of People:	0	3	5	4	1	12
# of Cars:	9	4	0	1	0	1
% Obstructed:	12.00%	0.76%	1.09%	5.94%	6.36%	9.26%
Transparency Rank:	11	7	1	8	2	6
Entry Visibility Rank:	11	7	1	9	3	6
Complexity Rank:	10	9	11	3	7	1
Street Quality Rank:	7	9	6	5	1	2
Weather:	Excellent	Good	Excellent	Excellent	Excellent	Excellent
Materials 1:	Concrete	Store front Concrete	Store front Metal Grill	Metal Panel Store front	Store front Metal Panels	Store front Metal Panels
Materials 2:	None					

Table 4-4. Comparison of the Three Least and Three Most Preferred Buildings.

	3 Least Preferred	3 Most Preferred
	Mean	Mean
Positive Clicks:	61	179
Negative Clicks:	130	73
Total Clicks:	191	253
Net Clicks:	-69	106
Correct Use ID:	24.64%	26.92%
% Nature in Image:	11.32%	13.19%
% Building in Image:	55.18%	57.03%
% Street/Sidewalk in Image:	**26.20%**	**7.39%**
# of People in Image:	**2.67**	**5.67**
# of Cars in Image:	**4.33**	**0.67**
% of Building Obstructed:	4.62%	7.19%
Facade Transparency Rank:	6.33	5.33
Entry Visibility Rank:	6.33	6.00
Facade Complexity Rank: (1 = high, 11=low)	**10.00**	**3.67**
Streetscape Quality Rank: (1 = high, 11=low)	**7.33**	**2.67**

Table 4-5. Comparison of Mean Scores of High/Low Preference.
(Boldface Indicates Moderate to High Correlation with Preference)

The two groups of buildings exhibit similar scores in some categories and divergent scores in others. Ability of the respondent to correctly identify the use or function of the building is approximately 25% for both groups. The percentages of nature and building image area are also approximately the same, as well as the percent the building view is obstructed, the transparency and entry visibility ranks. The data diverge on the parameters of street/sidewalk prevalence, the number of people/cars in the image, and on the facade complexity and streetscape quality rankings.

CHAPTER 5

DISCUSSION

The purpose of this research has been to determine the nature and extent to which a problem may exist in contemporary architectural design with respect to its impact on the sidewalk and the community of people that use sidewalks. The general assumption is that buildings can either help or hurt the walkability of a city and more importantly that buildings are a key element of cultural ecologies. A visual comparison of the respondents' most preferred and least preferred Street View images is given in Figures 5-1 and 5-2, and will be the starting point for this conversation.

Figure 5-1. The Most Preferred Street View Image:
San Francisco Federal Office Building, San Francisco, CA

Figure 5-2. The Least Preferred Street View Image:
Pulitzer Foundation Building, St. Louis, MO.

Subsequent sections of this discussion chapter will include a review of the findings in terms of the research questions, the research methods employed, the literature, suggestions for future research, and lastly some practical ideas for building designers and sponsors.

Most Versus Least Preferred Images

The results chapter reported the aggregated scores for the three most and least preferred buildings with an eye toward finding commonalities amongst the two groups. The most striking aspects within this comparison, see Table 4-5 above, are to be found in five of the thirteen data categories presented.

First, it would appear from the data that lower percentages of street and sidewalk visible in an image generate higher preference. This data point might be suspect owing to the manner in which respondents were instructed to "please look at the Street View photo of this building" rather than "please look at this image in its entirety," but it may also indicate that street and sidewalk are an important part of building appreciation. Also, the quality of the streetscape itself appears to correlate with building preference.

Second, it would appear from the data that the more people are visible in an image, the more it will be preferred. This is at odds with the literature regarding the tendency of architectural photographers to eliminate people from the images of buildings, and it would be instructive to pursue this line of inquiry if only to create architectural images that are more appealing. The Bauhaus notion that people spoil the architectural composition may have been misguided.

Third, the appearance of automobiles in an image seems to have a decidedly negative impact on building preference. While people in view may be an asset, cars and trucks likely are not. Of course, this too should be studied with more rigor to examine not only the quantity of cars but their quality and positioning within the image. For instance, the image with the highest number of visible cars depicts them close together which may imply "parking lot" which could actually be the cause for negative attribution as opposed to the cars themselves.

Fourth, facade complexity appears to be highly correlated with building preference and particularly on the negative side. The three least preferred buildings had the three least complex facades in terms of rank order.

This presents an interesting conundrum because simple forms are often touted as timeless and universal with the expectation, that like beige carpet in a model home, it will appeal to everyone. Of any factor studied thus far it is possible that facade complexity warrants the most additional study.

Section 1. Interpretation of the Results by Research Question

Aesthetic Engagement

Research Question 1. Can aesthetic engagement with buildings be measured? Do people have the ability to discern and express the differences between buildings? This study has been based on the notion that preference can serve as a proxy for aesthetic engagement with the understanding that discernment is the essence of preference. If the respondents could not discern the differences between buildings then we might have expected the data for preference given by clicks on positive or negative attributes to be the same for each building. However, the data showed a wide range between the most and least preferred buildings expressed in terms of positive and negative attribute clicks. Accordingly, it's reasonable to conclude that the subject could distinguish the differences between building images and were thus able to react for and against certain buildings. Whether this reaction was based all or partly on a mental comparison with a personal idealized conception of a building or not is presently impossible to say, though it would be fascinating to attempt a study of whether or not such constructs exist in the minds of respondents.

Vocabulary

Research Question 2. Do laypeople have the vocabulary to describe the architectural world around them? If so, what is that vocabulary? What words do laypeople most commonly use to describe the positive attributes of buildings? The most negative attributes of buildings? It would appear that respondents have little difficulty expressing themselves regarding building images given the sheer number of unique words provided during the attribute collection phase of the study, the distribution of positive and negative click choices on the photo-semantic assessment survey, and the number of write-in attributes that respondents provided. It was interesting to note that the vast bulk of the adjectives invoked did not come from architectural jargon but from everyday speech, despite the fact all of the student respondents were from design related disciplines.

One undercurrent of this study that was not expressed as a research question was the extent to which laypeople have the vocabulary to describe the built environment around them. The assumption was no, but the answer appears to be yes. It would be quite interesting to confirm if this is the case. It's rather like trying to determine if Eskimos really do have 40 words for snow, with the assumption being that the more words a person has to describe a particular thing or phenomenon, the more they are in touch and/or can relate. The corollary being that if a person has no words for something then it must not be very important. Further series of studies could examine the ranges and differences of the vocabularies used by different groups.

One aspect of the vocabulary results was particularly interesting – the general predilection of respondents to provide more negative words than positive words. In the word generation phase the split was 58 positive and 74 negative, and likewise in

the attribute write-in section of the survey the respondents wrote in a positive adjective 29 times yet a negative adjective 63 times.

However, on the attribute click portion of the survey instrument, where respondents were to select words from two lists of seven, the use of positive versus negative adjectives was 50/50. This could be interpreted to mean that when a respondent is left to their own devices and asked to supply words on their own that there is a natural tendency to use more negative words. While at the same time, if asked to select words from two roughly equal lists, they will tend to split their choices evenly. This may be a form of politeness or tendency to balance competing lists. It would be interesting to conduct more word generation exercises and see if negative words always outnumber positive, and if not, under what circumstances. Further, to determine if balancing between equal lists is a human trait one could even compare the vocabularies of different peoples.

It bears noting that "interesting" and "boring" were the two most often clicked attributes, and that those two words form one of Osgood's standard semantic pair of opposites. Further, it should also be noted that "unwelcoming" was by far the most often written-in word. If the two lists of seven adjectives were expanded to 10 on a future version of this study and the most often positive write-in words (minimalist), modern, and simple) and the most often negative write-in words (unwelcoming, plain, and hardscape) were added to see if the overall results would be the same or if the balance of emphasis would shift to the negative because of the world unwelcoming.

It would also be interesting to compare the results of respondents who only viewed the building as a photographic image and those who experienced the project in-person would be the same.

Function

Research Question 3. Do contemporary buildings reliably communicate their primary social purpose – their use or function? If so, do laypeople tend to prefer those buildings? Another segment of the data that would be interesting to compare with on-site users is that regarding the user's ability to discern what the function of the building is just by looking at the building. Conventional modern design doctrine has it that form follows function. This might imply that form should or could reveal function. But the data doesn't hold out much hope for the subset of buildings exposed to the respondents who were able to correctly identify the function only 28% of the time.

Unexpectedly, there was no correlation between use identification and building preference amongst the respondents for this study. One wonders, however, if this would hold true for target oriented users on the street trying to find the building and/or use it as a reference landmark. Another interesting study along these same lines might be to provide respondents with information about a particular building's function in order to assess how that information affects building preference. It's possible that the effect might be negative should respondents have any predilection to not like a given function such as a halfway house, mosque, or NSA office building. Or does this mean that respondents were unable to read the form correctly?

Nature and Streetscape

Research Questions 4 and 5. Do laypeople tend to respond more to the landscape/streetscape surrounding the building, or do they focus more on the building itself? Does the condition of the streetscape tend to affect preference for a building? Or engagement? Surprisingly, no correlation between the quantity of nature (plants and sky) depicted and building preference was found. The assumption

was that if a building image included a high percentage of nature, it would be more preferred. The instructions to the photo-sematic survey, "Please look at this building…" as opposed to "Please look at this building and its landscape…" may have impacted the data, or it may be that the quantity of nature in an image was of no import to respondents. Either way, no correlation was found.

The general purpose of the data regarding streetscape was to try and eliminate streetscape as a confounding factor in the quest to more fully understand how respondents respond to contemporary buildings. In fact, trying to make the separation is akin to professional architectural photos eliminating people from their hero shots – it creates a false representation.

In this case, the image of the streetscape was not eliminated but there was an effort to factor out its impact on building preference data or at least understand its role. This was done in 3 parts by looking at the quantity of nature in the image, the quantity of streetscape in the image, and the quality of streetscape in the image.

However, strong correlations were found with respect to the two streetscape analyses. The first correlation appeared to indicate that less streetscape equals higher preference for a given building. The second appeared to indicate that higher streetscape quality equals high preference for a given building. Thus, a building with the smallest percentage of streetscape that was of the highest quality would tend to be preferred. This would seem to be fairly self evident but could be confirmed in future studies by selecting a range of building images specifically suited to this issue.

People

Research Question 6. Does the presence of people in a Street View image tend to increase or decrease preference for that image? Does the presence of cars/trucks have a similar effect? It would appear from the data that the more people are visible in an image, the more it will be preferred. This is at odds with the

literature regarding the tendency of architectural photographers to eliminate people from the images of buildings, and it would be instructive to pursue this line of inquiry if only to create architectural images that are more appealing. The Bauhaus notion that people spoil the composition may have been misguided.

Entry

Research Question 7. Does a clearly evident entry to a building correlate with preference? Or engagement? Visibility of the building entries was assumed to be of importance to respondent building preference, but no correlation was found. Like the assumption regarding function, it may be of no importance to respondents looking at building images. It could be of great importance, however, to people actually using the buildings in real life. Accordingly, it would be interesting to compare two respondent groups and see what the data might show.

Facade Transparency

Research Question 8. Does the transparency of a building facade tend to correlate with preference? Or engagement? It was anticipated that buildings with relatively more transparent facades would be preferred over facades that were opaque or reflective. The assumption was based on the notion that a transparent facade would be more welcoming or at least less off-putting. No correlation was found, which might indicate that transparency is not a factor or it might be that the range of buildings in the survey instrument did not depict the extreme possibilities. Of the 11 images, only one could be called truly transparent and it is the only one where a person inside the building is evident. Other facades that probably are transparent in actual fact were obscured by exterior reflections or interior draperies.

A follow up study should be constructed to examine this issue more fully and would require the selection and presentation of images that directly address the

issue of transparency, which may also carry with it the issue of privacy which might even be more relevant than it was a short time ago.

Facade Complexity

Research Question 9. Does the complexity of a building facade tend to correlate with preference? Or engagement? Complexity was shown in the literature review to be one of the strongest indicators of preference in landscape visual assessment studies and with a Rho of 0.75 proved to be equally important in respondent assessment of building facades. This is likely the best supported evidence of reliability for this study as was predicted by a significant body of prior research. Nonetheless, this study is one of the first to transpose the idea from landscape to building design and accordingly should be replicated to improve confidence in the result. Moreover, the dimensions of complexity ought to be investigated, particularly with regard to pattern versus imagery versus text versus human form and the relative communicative value of each.

One line of research that was not possible was facade stability – do people prefer fixed facades versus the opposing extreme of a Times Square or Shanghai electronically animated facade? And who values which more?

Building Materials

Research Question 10. Do certain building material combinations tend to correlate with aesthetic engagement? Or preference? Unfortunately, no data was produced by this study with regard to the effects of building materials on preference because the range of materials was so limited owing to the method of selecting the images. While it might be tempting to note that the least preferred building was also the only building to have a predominantly concrete facade, the data can't support such a conclusion. As with several other aspects of this study, a follow up with images specifically selected to address the issue would be valuable.

Write-Ins

*Research Question 11. Does preference tend to correlate with the desire to write-in a descriptive adjective**?*** Interestingly, the data showed a moderate inverse correlation between building preference and the proclivity to write-in descriptive adjectives. This may indicate that the less you like a building, the more likely you are to write about it. This may or may not be related to the general idea that with regard to this study, when respondents were asked to provide adjectives they were more likely to provide negative adjectives than positive. While negative word usage was outside the scope of this work, it would seem to warrant an expanded literature review and additional experimental investigation.

Building Size

Research Question 12. Does length of the building or width of the image tend to correlate with preference or engagement? Even with respect to building preference, size does appear to matter, at least to a Spearman's Rho of 0.45 extent. Studies should be conducted with an eye toward equalizing building size as a variable.

Obstructions in the Field of View

Research Question 13. Does a clear view of the building (ie: no obstructions) tend to correlate with preference or engagement? This question was developed because several building images within the original group of 54 were fairly well obstructed by trucks or trees. By chance, none of those images were selected for the photo-semantic assessment survey and so the question became rather moot, though it might be a factor in future studies. Nonetheless, if obstruction had played a role in this study, a related question would have been to what extent can respondents fill in the blanks with regard to perceiving a building?

Section 2. Interpretation of the Results by Research Method

The method chosen for the research was equal parts photo elicitation, semantic differential, and visual assessment. Thus the label *photo-semantic assessment*. Images were used to elicit reactions from respondents in the form of adjective selection in order to rank order preference for certain buildings thereby allowing correlations with building features to be studied. While the method seemed to work well enough in that the photo-semantic assessment survey instrument could be administered online or in person, all three aspects of its form could be improved upon.

For instance, the photos themselves could be more compelling if displayed by some means other than a few square inches on a computer monitor or letter sized piece of paper. In fact, the images could have been quite immersive if the full range of business account Google mapping services had been deployed, and these should be tested in future studies.

It would also be entirely possible, and probably preferable, to deploy field researchers armed with cameras in order to take video or still images which might help create a more thorough visual ethnography of the building and also avoid Google's copyright restrictions.

Another scheme would involve turning the tables entirely and video/photographing human activity on the sidewalk from the building's point of view, the question being just what does the building "see" and what is it that people do in front of a building – are they engaged with the building at all?

The semantic aspect of the study method also needs further exploration. This study was a slight departure from Hershberger's in that Osgood's semantic pairs from the 1950's were replaced by unpaired positive and negative adjectives provided specifically for this study in response to a preview set of the building images by a

small group of respondents. This was done with an eye to possibly freshening up Hershberger's work with current vocabularies, but it's possible that the forty-year-old word lists would have worked just as well if not better. It would be interesting to reenact Hershberger's semantic pairs development exactly in order to see if there have in fact been meaningful changes in layperson word choices for descriptions of buildings.

The other deviation from Hershberger's work, not using semantic pairs representing a continuum, but instead using positive and negative lists alone without allowing respondents the opportunity to select a middle ground should also be reconsidered. It avoided the likelihood of numerous answers that are effectively the equivalent of don't know or don't care or can't tell the difference, but it's also possible that allowing for such answer might record the reality much better.

Standard practice for visual assessment studies of preference was also deviated from to a certain extent in that pairs of images weren't presented exactly as pairs of adjectives. This was done to preclude the chance of respondents judging buildings against each other in the possibly vain hope that they would simply study each building individually for what it is and respond accordingly. The goal of the study was not to hold an architectural beauty contest but rather to attempt to understand underlying causes for preference and possibly even aesthetic engagement. Nonetheless, it is possible that Kaplan and Groat's sorted pair methodology should be reassessed in hopes of improving future versions of this study.

Lastly, this study suffers mightily from a philosophical malaise of the 20th century known as primacy of the visual. We use the visual because it's easy and available and puts us at arms' length from the physical reality of the thing, but is it

the best or most complete method by which we should evaluate buildings, or anything else for that matter?

Sometimes when entering an old building the sounds and smells in the air, and the feeling of the floors underfoot, and the texture of the walls and columns against one's fingertips and body tell just as much or more than our eyes. Perhaps sensory ethnographies will be the ultimate outcome of the work started here.

Section 3. Interpretation of the Results by Key Literature

Aesthetic Engagement

So far the results of this study have been presented within the context of the research questions the study was designed to. It may be equally instructive to review the data in light of the broader questions and issues posed by the review of the literature.

In the early days, the driving conceptual force of this line of research was Berleant's concept that aesthetic engagement was the determining factor for the success of urban cultural ecologies. So the question for this research became how to develop a measure for aesthetic engagement which would allow aesthetic engagement to be studied scientifically. Also, Berleant asserted that purposefully designed-in understandable meaning was the key to engagement and he decried urban environments where that had been designed-out. Since there is no evident designed-in understandable meaning in any of the building images used in this research this assertion could not be studied here. The results presented herein may not be conclusive on either account as desired. For one thing, the measure for aesthetic engagement that was adopted was really a measure of preference for images of certain buildings, which may or may not be a proxy for aesthetic

engagement. It would likely take a great deal more work to develop a useful and reliable measure, though if Berleant is right, then it would be of critical importance.

Purposefully Designed-In Understandable Meaning

Along similar lines, it is not entirely clear if a measurement of purposefully designed-in understandable meaning has been developed for either side of the communication equation. The only overt meaning this study even attempted to consider was building function. If it was designed-in as meaningful statement or understood as a purposeful communication, it seems there was mostly failure amongst both parties.

The problem, once again, may have been the very narrow range of the buildings selected, none of which made much use of anything resembling conventional visual communication techniques. A proper study of this particular phenomenon might require finding buildings where a specific meaning intended to be understood by passersby had been demonstrably designed-in, and then testing user comprehension levels amongst a variety of passersby groups. Only in this way will we even be sure we are getting to the heart of the matter.

Relational Aesthetics and Self-Extension

Similarly, Bishop's central construct, drawn from Bourriaud, is that the criterion for artistic success of a work is the degree to which a relationship is created between the observer and the work. Much more than a temporal experience, the relationship would essentially be a permanent transformation of the receiver resulting from the intellectual dialogue that developed.

Now it might be reasonable to assume or imply that preference as measured by this study is an equivalent or proxy for measuring the strength of such a relationship. This might be troubling for those that believe relationships between inanimate objects and persons are impossible, despite the evidence for Belk's self-

extension concept to the contrary. It's also quite possible that along with understandable meaning having been designed-out of contemporary architecture, the possibility of developing a user/building relationship has been blocked as well. If human/building relationships are two way streets, adaption and change is required of both parties (as in the user manipulation of site furniture in Whyte's studies or the painting of pet rocks in Kiesler's studies, or the citizen remodeling of facades in Corbusier's worker housing or the remodeling and enhancement of your own home). Perhaps the building materials and methods favored by contemporary architects make such human manipulation virtually impossible, thereby preventing relationships from forming at all.

Human Agency and Symbolic Interaction

Moreover, if we believe Kocaballi's assertion that buildings have human agency, Smith's claim that social beings are things just as physical things are social, and that historical buildings tend to exhibit this attribute more than those constructed since World War I, then we must redouble our efforts to uncover the underlying mechanism more fully.

For instance, a research question that might be posed for the future might go something like this: If people are allowed to participate in the design/construction of a building, what is their proclivity to modify it afterwards? The opposite question can be asked as well: If people have been allowed no opportunity to participate in the design/construction, what is their proclivity to modify it afterwards?

Participation

However, if one looks at the design and construction of buildings that required extensive human created detail and ornament, is that not the same as, or even exemplary, participation? And could we therefore say there are only two choices when it comes to nurturing relationships between humans and buildings: to allow for

widespread community human involvement in the creation of the building, or the unfettered ability to modify it once it is erected.

20th century experiments in this regard have been few and far between. The status quo of anti-participative contemporary architecture might best be demonstrated by Mies van der Rohe's tall buildings wherein he designed a system for window blinds such that occupants could only raise them 0%, 50% or 100% in order to prevent any adulteration of his facade design. A more participatory model might be exemplified by an apartment house in Vienna wherein each occupant was encouraged to personalize their portion of the facade.

Figure 5-3. Hundertwasserhaus, Vienna. Retrieved from http://lisabraid.blogspot.com/p/privates-kunstlerisches-schaffen.html

Future studies along the lines of this work might establish measure for the before/after participative qualities of buildings, which would go to predicting the relationship building potential of any given structure. Other measures might be adapted and developed from interpersonal psychology to examine extant relationships.

The Politics of Architectural Neutrality and Boredom

Another concept described in the literature review that bears on this discussion is the politics of architectural neutrality noted by Bishop in regard to Graham's art installations. The notion goes that oppressive corporations and governments specifically use reflective and/or blank panelized building materials in the facades of buildings to specifically create an anti-communicative barrier between passersby on the exterior and the interior inhabitants who are presumably the oppressors.

These facades have the additional "benefit" of precluding participation before and after. Within the context of the present study, the only attempt to assess facades falling into this category relied on correlating facade transparency with building preference, the assumption being that transparent facades exhibit comparatively less negative affects that could be attributed to the politics of architectural neutrality.

A study more fully targeted at this specific issue might shed light. For instance, a program could be conceived by where contemporary entities are ranked according to some measure of their relative oppressiveness, obtaining images of their structures, and then correlating rank ordered arrays of both.

Another research strategy could be aimed at documenting user experience with such facades using any number of methods including interviews, visual ethnographies, or perhaps by adapting techniques used by researchers attempting to

understand the psychology of boredom, such as those developed by Eastman, focusing on attention span effects of certain stimuli. Unfortunately within the context of this study, there was no feasible means of measuring the attention-holding versus attention prevention of various facades on a time, retinal activity, or some other basis, but it is entirely within the realm of possibility.

Sensory Ethnography

Obviously, the visual addresses but one of the senses, the rest of which are often ignored. Visual assessment studies provide clues as to visual aesthetic engagement, but ignore entirely the tactile, olfactory, auditory, and taste aspects of aesthetic engagement.

An interesting study for the future might involve the full presentation of a small group of buildings in all their sensorial aspects, with the intent of understanding how senses affect preference. Would there be correlations between certain pairs of sense? Perhaps more importantly, is the information gained by signed interpreted by the user in such a way as to generate assumptions about what the other sense might encounter, and if so, is that interpretation correct? This all goes back to the arguments for a multi-sensorial architecture presented by Pallasmaa in the literature review.

An expansion of that study might work in reverse. Namely, if a respondent is presented only with tactile or olfactory data, does the respondent make interpretations regarding the visual and other sensations?

So can visual assessment be expanded to tactile assessment, olfactory assessment, and so forth, and can each and every test individually stand as a proxy for any other test owing to user interpretive skills and accordingly can any one or all of the test stand in as proxies for the assessment for aesthetic engagement?

Moreover, given the axiom that what gets measured is what gets done, if assessment measures other than visual were applied to the built environment, would practitioners focus/behave differently?

Further, how would overall built environment compare with one another on a multi-sensorial scale and is there a relative importance granted certain senses in certain locales? Another question: What is the difference in experience if my eyes see a texture but I don't allow my fingers to examine it versus the opposite versus both?

Moreover, which sense provides a more transformative result versus an experiential result? If we are to address the needs of the transformation economy, we must know what aspects of the built environment promote transformation versus mere experience. Could it be that the visual is not the greatest transformative sense? What if it were the least transformative? It's been noted that music has the greatest power to elicit emotion, and if the elicitation of emotion is the path to user transformation, then shouldn't the builders of the built environment focus most on that aspect – the auditory? And if that's the case, should we evaluate buildings merely by playing recordings of the sounds in/around/made by buildings. If we did, would we be surprised at what we learn, or would we realize we've known it all along but took no action?

What if critics of the built environment evaluated only the "sound tracks" of a building or the "touch tracks" of a building that is primarily tactile? And why are people afraid to touch buildings anymore? When was the last time you touched a building with the intent of exploring that building and if it's been awhile, why?

Another type of study would involve assessment of the built environment with respect to various overarching criteria. For instance, if the criteria for a successful building were that it should "communicate the strength and character of the people

in the community in which it was created" how would that criterion be assessed? Let's assume all buildings communicate with users/observers to a greater or lesser degree (even when the intent of the communication is that there shall be no communication). How can we assess the presence of understandable narratives?

CHAPTER 6

CONCLUSIONS

The purpose of this research was to assess the condition of the human/building interface at sidewalk level by reframing contemporary architecture using Google Street View images. In particular, the objective was to find a means by which aesthetic engagement in the urban cultural ecology could be measured.

Photo-elicitation, semantic differential, and visual assessment methods were adapted and combined to develop a post-occupancy photo semantic assessment survey instrument. The goal was to evaluate respondent preference for building images based on the assumption that preference can be used as a proxy measure for aesthetic engagement. Architectural adjective usage amongst 14 graduate students was surveyed, and the resulting 175-word list was synthesized down to seven positive and seven negative adjectives. Eleven representative buildings were selected from the *Phaidon Atlas of 21st Century World Architecture*, and photographic Street Views were created.

The photo-semantic assessment survey instrument was administered to 62 graduate students given that demographic is reasonably similar to half of the urban walker population stakeholders in the outcome (the other half being seniors). Respondents were asked to study the images and record their impressions by selecting positive and/or negative adjectives from the two lists. Respondent preferences for the building images were then ranked ordered and correlations were run against various image factors including facade complexity and transparency.

Strong to moderate correlations between preference and several image factors were observed indicating that certain building design factors, particularly facade complexity and streetscape quality, play a predictable role. The research questions and findings are given in summary form in Table 4-6.

Research Question	Findings
Can aesthetic engagement with buildings be measured? Do people have the ability to discern and express the differences between buildings?	Yes. The subjects were clearly able to engage with the images and discern differences between the buildings and streetscapes depicted therein.
Do laypeople have the vocabulary to describe the architectural world around them? If so, what is that vocabulary? What words do laypeople most commonly use to describe the positive attributes of buildings? The most negative attributes of buildings?	Yes. The subjects demonstrated an extensive non-technical vocabulary. "Interesting" and "Boring" were the most commonly used words.
Do contemporary buildings reliably communicate their primary social purpose – their use or function? If so, do laypeople tend to prefer those buildings?	No. The subjects were not able to decipher the functions of buildings from the images and it did not appear to affect preference.
Do laypeople tend to respond more to the landscape/streetscape surrounding the building, or do they focus more on the building itself?	Unclear. While the percentage of nature in the image area did not correlate with preference, but the study could be improved in this aspect.
Does the presence of people in an architectural image tend to increase or decrease preference for that image? Does the presence of cars/trucks have a similar effect?	Yes. The presence of people in an image correlated with preference while the presence of cars negatively affected preference.
Does a clearly evident entry to a building correlate with preference? Or engagement?	No. Preference was the same for high or low entry visibility.
Does the condition of the streetscape tend to affect preference for a building?	Yes. Preference correlates strongly with the quality of the streetscape.
Does the transparency of a building facade tend to correlate with preference?	No. Preference was the same for high or low entry transparency.
Does the complexity of a building facade tend to correlate with preference?	Yes. The subjects preferred complex facades by a strong margin.
Do certain building material combinations tend to correlate with preference?	Unclear. The images selected for the study depicted the same materials.
Does preference tend to correlate with the desire to write-in a descriptive adjective?	Yes. Low preference correlates with high desire to write-in adjectives.
Does length of the building or width of the image tend to correlate with preference?	Yes. Greater image width correlated moderately with preference.
Does a clear view of the building (i.e., no obstructions) tend to correlate with preference?	Yes. Greater obstruction correlated moderately with preference.

Table 6-1. Research Questions and Findings.

Perhaps the most compelling aspect of the results is the key finding that respondent preference correlated very strongly with complexity. This outcome has been observed and replicated numerous times in the literature regarding visual assessment of the landscape. The data from this study appear to indicate that complexity is operative in preference for buildings as well. Had this correlation not been observed, doubt might be cast on the validity of the entire project. Given confidence in the outcome presented, it seems reasonable to conclude that it is possible to measure human aesthetic engagement with buildings at street level and thereby develop a greater understanding of the mechanisms at work.

What if Jacobs was correct in her 2006 assessment that the built environment at street level is headed for a dark ages? What if Bishop was correct in her 2004 proposition that the design class has been using the wrong criteria for artistic success and that it should be changed to measuring the degree to which a relationship is created between the object/event and user/observer? What if Berleant was correct in his 2013 argument that the very survival of urban dwellers is entirely dependent on their ability to connect with the cultural ecology around them via aesthetic engagement? And what if he is also correct in saying that aesthetic engagement is entirely dependent on a disarmingly simple formula wherein: purposefully designed-in understandable meaning + user/observer perception and appreciation = aesthetic engagement?

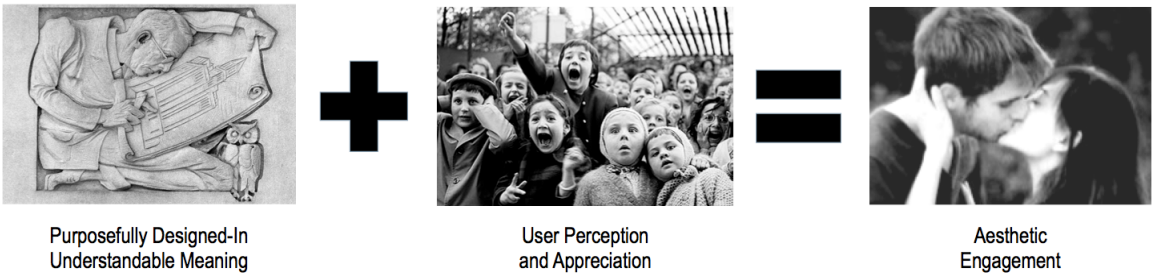

Figure 6-1. Berleant's Formula for Aesthetic Engagement

Given the data presented in this study, which demonstrated, however imperfectly, that the subject population had sufficient perceptive skills to engage aesthetically with images of the built environment, then we must look at Berleant's other variable as the source of Jacob's problem and the critical factor in Bishop's criteria. It is reasonable to propose there is a lack of purposefully designed-in understandable meaning in the built environment, and that after the outcomes of this study regarding *perception* are expanded, generalized, and validated, *meaning* should be the next topic of investigation.

Several avenues for future research are suggested including the comparison of lab versus on-site respondents; the comparison of user types including targeted, passerby and tourist; the effect of skyline on user preference for Street Views; and the effect of participation in the building making process on short and long term respondent preference.

- If two groups of respondents took the same semantic differential survey, one after looking at images of buildings and the other after observing the buildings in person, would the results differ?
- Does the skyline view of a building affect user preference for a street level view? Does a glamorous skyline make up for less than ideal work at street level?
- How does participation in building-making by laypeople, either in the construction phase or in the post-occupancy phase, affect preference?
- If there were three groups of respondents - one that represented target-oriented users such as those that work in a building; one that represented passersby that encountered the building walking to work; and one that represented tourists who might only visit the building once or twice in their lifetime – would their responses to a photo-semantic assessment be similar or dissimilar and in what ways?
- Do laypeople have pre-existing images or mental constructs of idealized buildings in their minds, and if so when they indicate preference for an image are they comparing it to that construct?

- What is the complete vocabulary used by laypeople to describe the built environment and their relationship with the built environment, and how does it vary by demographics if at all?
- Why do respondents appear to favor negative descriptors of the built environment versus the positive? Is this in fact the case?
- Do the most commonly used adjectives found in this study (interesting and boring) really define the ends of the building preference continuum or are there other dimensions that were not detected?
- If the adjective word lists used in this study were expanded to 10, 20, or 30 words, would the results change?
- How does the effect of "pre-knowledge" of a building such as having seen it on TV or a website, and how does "post-knowledge" of a building such as other people's opinions affect a respondent's responses?
- Does building transparency have no effect on preference or did this study not measure it correctly?
- While this study found that facade complexity appears to be a major determinant of building preference, what does complexity really mean and what are the possible ranges of complexity?
- Does facade stability affect preference? Are the constantly changing video facades such as those found in Times Square or the constantly colored lighting on the facade of Phoenix Children's Hospital have a beneficial effect on facade complexity? And if so which, for which respondent groups?
- Do building materials affect preference? If so, how?
- How does the streetscape really impact respondent preference? Do respondents separate street and building in their minds?
- How do respondent perceptual senses (sight, sound, touch, smell/taste) interact with each other with regard to preference, and which are dominant in what circumstances?
- Can the 28 parameters from the Boredom Proneness Scale be adapted to measuring aesthetic engagement between humans and buildings?

Given that the literature is extensive that buildings have human agency, that aesthetic engagement is important to the development of vibrant urban cultural ecologies; that relational aesthetic theory provides a reasonable criteria for

determining success; that before/after participation is essential to communication; and that the politics of architectural neutrality and the psychology of boredom is to be avoided, it is reasonable to conclude a new model for the development of the built environment might be needed. Specifically, that model might include a new conception of building authorship and copyright that is rooted in the community and not the developer, as well as a new means of incorporating the community in the production of the built environment in line with Jacob's dictum: Cities serve everyone when they are built by everyone. This may be particularly true if society wishes to privilege the walkable city.

While it might be easy to imagine such things, fomenting actual change in a huge industry with uncountable stakeholders having deeply vested interests will be an extraordinarily difficult challenge. We are prisoners chained in Plato's moderne cave, unable to fathom the multitude of forces behind us casting shadows on our mass produced industrial walls, and temporarily but thoroughly blinded should we attempt escape. Nonetheless, escape we must.

AFTERWORD

On March 7th, 2014, while in the middle of writing chapter 5, I attempted to create a demonstration project, somewhat relevant to the proceedings of this study, inside the circus tent at ASU's EMERGE 2014 Carnival of the Future. My goal was to have members of the audience create hand painted masonite "stones" for a cardboard building in order to show that crowd-sourcing the design of building elements was possible and that the results wouldn't be too hideous. What happened instead was that the audience became fascinated by a video projection system I had set up that recorded 2 second segments of people in front of the booth and displayed the videos on two large screens in a mosaic tile format.

Figure A-1. ASU EMERGE 2014 Booth by John Ball

Eventually I gave up on the idea of people painting and just watched them interact with the videos. A couple of things became apparent. First, people love to search for images of themselves in a crowd and basically will not stop looking until they find themselves. Second, the smaller the image of themselves, the better. When I reset the video sequence to make their images larger, their interest quickly

diminished. If I let the sequence run it subdivided the images into ever smaller units which made it much harder to find themselves and accordingly held their interest much longer. At the time, it reminded me of the effect Maya Lin's Vietnam Veterans' Memorial has on people. The searching heightens the experience.

What I've been looking for in this research is how to get people to really look at a building for extended periods of time and to develop a personal relationship with the building which is the criteria for artistic success posed by relational aesthetic theory. I've also been looking for what to plug into Berleant's formula for aesthetic engagement which equals the product of purposefully designed-in understandable meaning and open enthusiastic viewer reception. In the example of my carnival booth video the meaning is carried by the person's face and attire in the context of hundreds of other faces and the viewer reception is naturally open and enthusiastic because it is entirely about them.

I suppose the question for me is: would the same behavior occur if I had obtained hundreds of painted stones from audience members and displayed them in a large grid, would the audience search and search until they found theirs? And would they be pride of their stone in a field of others? Or would their search be less insistent because their stone, despite the fact they had designed it, would carry less meaning than a photographic/video image of themselves. Can an abstract representation of one's self do what a photo can do? Is the psycho/social process at work here related to the natural urge to be part of something larger than oneself, without losing oneself? And does it also somehow relate to the overall psychology of an Amish barn-raising where an entire community might work on a barn for several days and individually take pride in that structure ever thereafter? And doesn't the present process of assembling contemporary buildings from pre-manufactured industrialized materials will all traces of human existence removed preclude any of

the above from happening? And should we be therefore not be surprised at all that aesthetic engagement and personal relationship development with contemporary buildings is all but non-existent?

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APPENDIX A

BUILDING DATA SHEETS

Word Attribution Survey Respondent Data

Positive Attributes

Attribute	Clicks	%age
Welcoming	9	4%
Interesting	50	20%
Unique	46	19%
Confident	6	2%
Natural	6	2%
Stylish	24	10%
Honest	8	3%
*Other (Specify)**	4	2%
Positive:	**153**	**62%**

*Flashy, Airy, Crafted, Fancy

Negative Attributes

Attribute	Clicks	%age
Out-Dated	1	0%
Utilitarian	0	0%
Imposing	7	3%
Fussy	20	8%
Pretentious	12	5%
Boring	4	2%
Confusing	46	19%
*Other (Specify)**	5	2%
Negative:	**95**	**38%**

*Singular Strings, Strange, Opaque, Blocking Entrance, Closed Off

Net Attribution Score: **58**
Total Attributions: **248**

Use Identification Survey Respondent Data

Building Use/Function

Function	Clicks	%age
Offices	11	18.03%
Worship	1	1.64%
Dormitory	3	4.92%
Aquarium	1	1.64%
Museum	13	21.31%
Theater	5	8.20%
Apt/Condo	20	32.79%
Concert Hall	2	3.28%
Classrooms	0	0.00%
Youth Center	2	3.28%
Library	3	4.92%

Actual: Apt/Condo **Correct: 32.79%**

Thumbnail: (See CD for Complete Image)

Image Analysis Summary (Based on Complete Image)

			Rank
% Nature:	6.72%	Building Transparency:	5
% Building:	66.22%	Visibilty of Entry:	4
% Street/Sidewalk:	4.80%	Facade Complexity:	2
# of People in Image:	6	Street/Sidewalk Condition:	3
# Cars/Trucks in Image:	0	Apparent Weather:	Excellent
% Building Obstructed:	21.23%	Predominant Building Materials Used:	Metal Grill
		Secondary Building Materials Used:	Storefront

Image Catalog Information

Phaidon Atlas Page No.: 684
Building Name: 40 Bond Street Apartments
# of Screen Grabs: 5
Image Size in Pixels: 7469 x 1184
Image Size in MB: 2.8

Year Built: 2007
Architect: Herzog & DeMueron
Architect Location: Basel
Building Geo Locator: 40.7264, -73.9936
Building City: New York

Results for Survey Building 1

Word Attribution Survey Respondent Data

Positive Attributes	Attribute	Clicks	%age
	Welcoming	1	0%
	Interesting	19	9%
	Unique	22	10%
	Confident	18	8%
	Natural	3	1%
	Stylish	23	11%
	Honest	9	4%
	*Other (Specify)**	7	3%
	Positive:	**102**	**47%**

*Refreshing, Minimalist x2, Sharp, Modern, Clean, Sidewalk Accessible

Negative Attributes	Attribute	Clicks	%age
	Out-Dated	3	1%
	Utilitarian	21	10%
	Imposing	18	8%
	Fussy	0	0%
	Pretentious	13	6%
	Boring	27	12%
	Confusing	22	10%
	*Other (Specify)**	11	5%
	Negative:	**115**	**53%**

*Simple, Monumental, Unwelcoming x3, Plain x2, Awesome, Stark, Secretive

Net Attribution Score: **-13**
Total Attributions: **217**

Use Identification Survey Respondent Data

Building Use/Function	Function	Clicks	%age
	Offices	2	3.28%
	Worship	3	4.92%
	Dormitory	0	0.00%
	Aquarium	2	3.28%
	Museum	25	40.98%
	Theater	9	14.75%
	Apt/Condo	0	0.00%
	Concert Hall	2	3.28%
	Classrooms	6	9.84%
	Youth Center	2	3.28%
	Library	10	16.39%

Actual: Museum **Correct: 40.98%**

Thumbnail: (See CD for Complete Image)

Image Analysis Summary (Based on Complete Image)

			Rank
% Nature:	9.64%	Building Transparency:	10
% Building:	48.80%	Visibilty of Entry:	10
% Street/Sidewalk:	7.23%	Facade Complexity:	8
# of People in Image:	0	Street/Sidewalk Condition:	4
# Cars/Trucks in Image:	1	Apparent Weather:	Excellent
% Building Obstructed:	0.00%	Predominant Building Materials Used:	Metal Panels
		Secondary Building Materials Used:	None

Image Catalog Information

Phaidon Atlas Page No.:	671	Year Built:	2007
Building Name:	Akron Art Museum	Architect:	Coop Himmelblau
# of Screen Grabs:	5	Architect Location:	Vienna
Image Size in Pixels:	2604 x 856	Building Geo Locator:	41.0841, -81.5153
Image Size in MB:	0.416	Building City:	Akron

Results for Survey Building 2

Word Attribution Survey Respondent Data

Positive Attributes

Attribute	Clicks	%age
Welcoming	25	13%
Interesting	14	7%
Unique	4	2%
Confident	6	3%
Natural	31	16%
Stylish	10	5%
Honest	21	11%
*Other (Specify)**	1	1%
Positive:	**112**	**57%**

*Landscaping

Negative Attributes

Attribute	Clicks	%age
Out-Dated	12	6%
Utilitarian	6	3%
Imposing	5	3%
Fussy	5	3%
Pretentious	4	2%
Boring	26	13%
Confusing	20	10%
*Other (Specify)**	6	3%
Negative:	**84**	**43%**

*Bold, Messy, Hard-edged, Plain, Concrete, Moat

Net Attribution Score: **28**
Total Attributions: **196**

Use Identification Survey Respondent Data

Building Use/Function

Function	Clicks	%age
Offices	6	9.84%
Worship	2	3.28%
Dormitory	1	1.64%
Aquarium	0	0.00%
Museum	16	26.23%
Theater	5	8.20%
Apt/Condo	3	4.92%
Concert Hall	2	3.28%
Classrooms	14	22.95%
Youth Center	2	3.28%
Library	10	16.39%

Actual: Offices **Correct: 9.84%**

Thumbnail: (See CD for Complete Image)

Image Analysis Summary (Based on Complete Image)

			Rank
% Nature:	9.72%	Building Transparency:	9
% Building:	37.50%	Visibilty of Entry:	8
% Street/Sidewalk:	25.46%	Facade Complexity:	6
# of People in Image:	0	Street/Sidewalk Condition:	11
# Cars/Trucks in Image:	0	Apparent Weather:	Excellent
% Building Obstructed:	24.30%	Predominant Building Materials Used:	Concrete
		Secondary Building Materials Used:	Metal Panel

Image Catalog Information

Phaidon Atlas Page No.:	643	Year Built:	2006
Building Name:	California Endowment Health Found.	Architect:	Rios Clementi Hale
# of Screen Grabs:	3	Architect Location:	Los Angeles
Image Size in Pixels:	3925 x 1210	Building Geo Locator:	33.7835, -118.2440
Image Size in MB:	1.1	Building City:	Los Angeles

Results for Survey Building 3

Word Attribution Survey Respondent Data

Positive Attributes	Attribute	Clicks	%age
	Welcoming	7	3%
	Interesting	41	17%
	Unique	47	19%
	Confident	20	8%
	Natural	0	0%
	Stylish	34	14%
	Honest	9	4%
	*Other (Specify)**	0	0%
	Positive:	**158**	**64%**

*

Negative Attributes	Attribute	Clicks	%age
	Out-Dated	2	1%
	Utilitarian	9	4%
	Imposing	25	10%
	Fussy	4	2%
	Pretentious	15	6%
	Boring	3	1%
	Confusing	24	10%
	*Other (Specify)**	5	2%
	Negative:	**87**	**36%**

*Weird, Unwelcoming, Terrible Entrance, Formidable, Amalgamation

Net Attribution Score: **71**
Total Attributions: **245**

Use Identification Survey Respondent Data

Building Use/Function	Function	Clicks	%age
	Offices	5	8.47%
	Worship	0	0.00%
	Dormitory	0	0.00%
	Aquarium	3	5.08%
	Museum	23	38.98%
	Theater	9	15.25%
	Apt/Condo	0	0.00%
	Concert Hall	8	13.56%
	Classrooms	0	0.00%
	Youth Center	2	3.39%
	Library	9	15.25%

Actual: Museum **Correct: 38.98%**

Thumbnail: (See CD for Complete Image)

Image Analysis Summary (Based on Complete Image)

			Rank
% Nature:	7.93%	Building Transparency:	8
% Building:	41.85%	Visibilty of Entry:	9
% Street/Sidewalk:	6.61%	Facade Complexity:	3
# of People in Image:	4	Street/Sidewalk Condition:	5
# Cars/Trucks in Image:	1	Apparent Weather:	Excellent
% Building Obstructed:	5.94%	Predominant Building Materials Used:	Metal Panel
		Secondary Building Materials Used:	Storefront

Image Catalog Information

Phaidon Atlas Page No.:	650	Year Built:	2006
Building Name:	Denver Art Museum Expansion	Architect:	Daniel Libeskind / Davis
# of Screen Grabs:	6	Architect Location:	New York
Image Size in Pixels:	4001 x 1126	Building Geo Locator:	39.7372, -104.9894
Image Size in MB:	0.818	Building City:	Denver

Results for Survey Building 4

Word Attribution Survey Respondent Data

Positive Attributes

Attribute	Clicks	%age
Welcoming	1	1%
Interesting	9	5%
Unique	5	3%
Confident	16	9%
Natural	4	2%
Stylish	13	7%
Honest	9	5%
*Other (Specify)**	5	3%
Positive:	**62**	**33%**

*Transparent, Minimalist, Conventional, Simple, Unfinished

Negative Attributes

Attribute	Clicks	%age
Out-Dated	12	6%
Utilitarian	20	11%
Imposing	19	10%
Fussy	2	1%
Pretentious	12	6%
Boring	41	22%
Confusing	12	6%
*Other (Specify)**	8	4%
Negative:	**126**	**67%**

*Striking, Somber, Unwelcoming, Plain, Poor Streetscape, Bleh, Block, Fortress

Net Attribution Score: **-64**
Total Attributions: **188**

Use Identification Survey Respondent Data

Building Use/Function

Function	Clicks	%age
Offices	39	65.00%
Worship	0	0.00%
Dormitory	0	0.00%
Aquarium	3	5.00%
Museum	3	5.00%
Theater	1	1.67%
Apt/Condo	0	0.00%
Concert Hall	5	8.33%
Classrooms	2	3.33%
Youth Center	2	3.33%
Library	5	8.33%

Actual: Museum **Correct: 5.00%**

Thumbnail: (See CD for Complete Image)

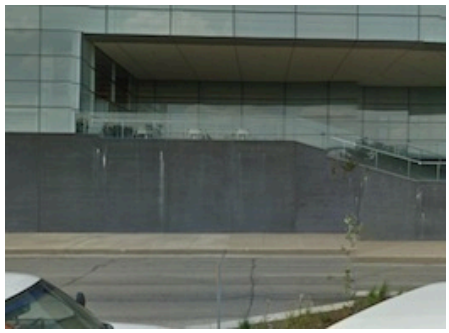


Image Analysis Summary (Based on Complete Image)

			Rank
% Nature:	8.45%	Building Transparency:	7
% Building:	73.52%	Visibilty of Entry:	7
% Street/Sidewalk:	19.72%	Facade Complexity:	9
# of People in Image:	3	Street/Sidewalk Condition:	9
# Cars/Trucks in Image:	4	Apparent Weather:	Good
% Building Obstructed:	0.76%	Predominant Building Materials Used:	Storefront
		Secondary Building Materials Used:	Concrete

Image Catalog Information

Phaidon Atlas Page No.:	658	Year Built:	2005
Building Name:	Figge Art Museum	Architect:	David Chipperfield
# of Screen Grabs:	10	Architect Location:	London
Image Size in Pixels:	6968 x 1054	Building Geo Locator:	40.7264, -73.9936
Image Size in MB:	1.3	Building City:	Davenport

Results for Survey Building 5

Word Attribution Survey Respondent Data

Positive Attributes

Attribute	Clicks	%age
Welcoming	15	8%
Interesting	14	7%
Unique	9	5%
Confident	11	6%
Natural	2	1%
Stylish	5	3%
Honest	24	12%
*Other (Specify)**	2	1%
Positive:	**82**	**42%**

*Repetitive, Typical

Negative Attributes

Attribute	Clicks	%age
Out-Dated	22	11%
Utilitarian	13	7%
Imposing	14	7%
Fussy	5	3%
Pretentious	9	5%
Boring	23	12%
Confusing	17	9%
*Other (Specify)**	8	4%
Negative:	**111**	**58%**

*Repetitive, Unwelcoming x2, Hardscape, Ugly, No Plants, Structural, Busy

Net Attribution Score: **-29**
Total Attributions: **193**

Use Identification Survey Respondent Data

Building Use/Function

Function	Clicks	%age
Offices	34	56.67%
Worship	3	5.00%
Dormitory	2	3.33%
Aquarium	1	1.67%
Museum	0	0.00%
Theater	0	0.00%
Apt/Condo	4	6.67%
Concert Hall	4	6.67%
Classrooms	4	6.67%
Youth Center	4	6.67%
Library	4	6.67%

Actual: Concert Ha **Correct: 6.67%**

Thumbnail: (See CD for Complete Image)

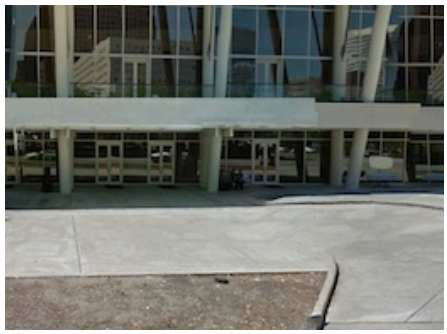


Image Analysis Summary (Based on Complete Image)

			Rank
% Nature:	2.63%	Building Transparency:	4
% Building:	63.16%	Visibilty of Entry:	2
% Street/Sidewalk:	36.84%	Facade Complexity:	4
# of People in Image:	0	Street/Sidewalk Condition:	10
# Cars/Trucks in Image:	5	Apparent Weather:	Excellent
% Building Obstructed:	2.04%	Predominant Building Materials Used:	Storefront
		Secondary Building Materials Used:	Metal Panels

Image Catalog Information

Phaidon Atlas Page No.:	654	Year Built:	2002
Building Name:	Hobby Center for the Performing Arts	Architect:	Robert A.M. Stern
# of Screen Grabs:	8	Architect Location:	New York
Image Size in Pixels:	6608 x 1141	Building Geo Locator:	29.7619, -95.3695
Image Size in MB:	1.8	Building City:	Houston

Results for Survey Building 6

Word Attribution Survey Respondent Data

Positive Attributes

Attribute	Clicks	%age
Welcoming	24	10%
Interesting	23	10%
Unique	19	8%
Confident	13	6%
Natural	24	10%
Stylish	19	8%
Honest	32	14%
*Other (Specify)**	4	2%
Positive:	**158**	**69%**

*Flamboyant, Structured, Modern, Tidy

Negative Attributes

Attribute	Clicks	%age
Out-Dated	11	5%
Utilitarian	12	5%
Imposing	5	2%
Fussy	6	3%
Pretentious	6	3%
Boring	20	9%
Confusing	6	3%
*Other (Specify)**	6	3%
Negative:	**72**	**31%**

*Shiny, Flat, Light, Unwelcoming, Hardscape, Plain,

Net Attribution Score: **86**
Total Attributions: **230**

Use Identification Survey Respondent Data

Building Use/Function

Function	Clicks	%age
Offices	4	6.67%
Worship	1	1.67%
Dormitory	0	0.00%
Aquarium	1	1.67%
Museum	10	16.67%
Theater	0	0.00%
Apt/Condo	0	0.00%
Concert Hall	2	3.33%
Classrooms	21	35.00%
Youth Center	3	5.00%
Library	18	30.00%

Actual: Classroom Correct: 35.00%

Thumbnail: (See CD for Complete Image)

Image Analysis Summary (Based on Complete Image)

			Rank
% Nature:	25.19%	Building Transparency:	2
% Building:	60.00%	Visibilty of Entry:	3
% Street/Sidewalk:	3.70%	Facade Complexity:	7
# of People in Image:	1	Street/Sidewalk Condition:	1
# Cars/Trucks in Image:	0	Apparent Weather:	Excellent
% Building Obstructed:	6.36%	Predominant Building Materials Used:	Storefront
		Secondary Building Materials Used:	Metal Panels

Image Catalog Information

Phaidon Atlas Page No.:	665	Year Built:	2003
Building Name:	McCormick Tribune Campus Center	Architect:	OMA
# of Screen Grabs:	7	Architect Location:	Rotterdam
Image Size in Pixels:	9148 x 1047	Building Geo Locator:	41.8256, -87.6290
Image Size in MB:	2.5	Building City:	Chicago

Results for Survey Building 7

Word Attribution Survey Respondent Data

Positive Attributes	Attribute	Clicks	%age
	Welcoming	10	6%
	Interesting	7	4%
	Unique	2	1%
	Confident	7	4%
	Natural	2	1%
	Stylish	8	5%
	Honest	21	12%
	*Other (Specify)**	1	1%
	Positive:	**58**	**34%**

*Street Level

Negative Attributes	Attribute	Clicks	%age
	Out-Dated	18	10%
	Utilitarian	21	12%
	Imposing	7	4%
	Fussy	6	3%
	Pretentious	5	3%
	Boring	45	26%
	Confusing	10	6%
	*Other (Specify)**	3	2%
	Negative:	**115**	**66%**

*Unwelcoming, Hardscape, Typical

Net Attribution Score: **-57**
Total Attributions: **173**

Use Identification Survey Respondent Data

Building Use/Function	Function	Clicks	%age
	Offices	9	15.25%
	Worship	3	5.08%
	Dormitory	2	3.39%
	Aquarium	1	1.69%
	Museum	21	35.59%
	Theater	4	6.78%
	Apt/Condo	6	10.17%
	Concert Hall	2	3.39%
	Classrooms	2	3.39%
	Youth Center	5	8.47%
	Library	4	6.78%

Actual: Museum **Correct: 35.59%**

Thumbnail: (See CD for Complete Image)

Image Analysis Summary (Based on Complete Image)

			Rank
% Nature:	0.00%	Building Transparency:	1
% Building:	58.33%	Visibilty of Entry:	1
% Street/Sidewalk:	41.03%	Facade Complexity:	11
# of People in Image:	5	Street/Sidewalk Condition:	6
# Cars/Trucks in Image:	0	Apparent Weather:	Excellent
% Building Obstructed:	1.09%	Predominant Building Materials Used:	Storefront
		Secondary Building Materials Used:	Metal Grill

Image Catalog Information

Phaidon Atlas Page No.:	685	Year Built:	2007
Building Name:	New Museum of Contemporary Art	Architect:	SANAA
# of Screen Grabs:	2	Architect Location:	Tokyo
Image Size in Pixels:	2646 x 1184	Building Geo Locator:	40.7248, -73.9976
Image Size in MB:	1	Building City:	New York

Results for Survey Building 8

Word Attribution Survey Respondent Data

Positive Attributes

Attribute	Clicks	%age
Welcoming	8	4%
Interesting	18	10%
Unique	7	4%
Confident	16	9%
Natural	1	1%
Stylish	24	13%
Honest	11	6%
*Other (Specify)**	0	0%
Positive:	**85**	**47%**

*

Negative Attributes

Attribute	Clicks	%age
Out-Dated	8	4%
Utilitarian	14	8%
Imposing	14	8%
Fussy	6	3%
Pretentious	8	4%
Boring	26	14%
Confusing	16	9%
*Other (Specify)**	4	2%
Negative:	**96**	**53%**

*Unwelcoming x2, Looming, Closed Off

Net Attribution Score: **-11**
Total Attributions: **181**

Use Identification Survey Respondent Data

Building Use/Function

Function	Clicks	%age
Offices	8	13.33%
Worship	1	1.67%
Dormitory	6	10.00%
Aquarium	0	0.00%
Museum	0	0.00%
Theater	0	0.00%
Apt/Condo	43	71.67%
Concert Hall	1	1.67%
Classrooms	1	1.67%
Youth Center	0	0.00%
Library	0	0.00%

Actual: Apt/Condo Correct: 71.67%

Thumbnail: (See CD for Complete Image)

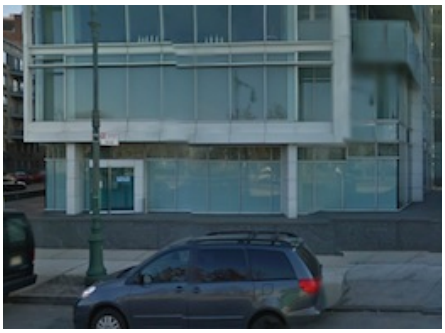


Image Analysis Summary (Based on Complete Image)

			Rank
% Nature:	5.62%	Building Transparency:	3
% Building:	75.84%	Visibilty of Entry:	5
% Street/Sidewalk:	14.04%	Facade Complexity:	5
# of People in Image:	0	Street/Sidewalk Condition:	8
# Cars/Trucks in Image:	3	Apparent Weather:	Excellent
% Building Obstructed:	2.17%	Predominant Building Materials Used:	Storefront
		Secondary Building Materials Used:	Metal Panel

Image Catalog Information

Phaidon Atlas Page No.:	683	Year Built:	2006
Building Name:	Perry St. & Charles St. Apartments	Architect:	Richard Meier
# of Screen Grabs:	2	Architect Location:	New York
Image Size in Pixels:	3168 x 1110	Building Geo Locator:	40.7339, -74.0086
Image Size in MB:	0.652	Building City:	New York

Results for Survey Building 9

Word Attribution Survey Respondent Data

Positive Attributes

Attribute	Clicks	%age
Welcoming	0	0%
Interesting	10	5%
Unique	7	3%
Confident	14	7%
Natural	9	4%
Stylish	13	6%
Honest	6	3%
*Other (Specify)**	4	2%
Positive:	**63**	**30%**

*Sleek, Hermetic, Simple, Dramatic

Negative Attributes

Attribute	Clicks	%age
Out-Dated	18	8%
Utilitarian	21	10%
Imposing	24	11%
Fussy	5	2%
Pretentious	13	6%
Boring	38	18%
Confusing	24	11%
*Other (Specify)**	6	3%
Negative:	**149**	**70%**

*Univiting x2, Unwelcoming x3, Hidden

Net Attribution Score: **-86**
Total Attributions: **212**

Use Identification Survey Respondent Data

Building Use/Function

Function	Clicks	%age
Offices	5	8.33%
Worship	14	23.33%
Dormitory	0	0.00%
Aquarium	1	1.67%
Museum	20	33.33%
Theater	5	8.33%
Apt/Condo	1	1.67%
Concert Hall	3	5.00%
Classrooms	1	1.67%
Youth Center	4	6.67%
Library	6	10.00%

Actual: Museum **Correct: 33.33%**

Thumbnail: (See CD for Complete Image)

Image Analysis Summary (Based on Complete Image)

			Rank
% Nature:	25.51%	Building Transparency:	11
% Building:	33.67%	Visibilty of Entry:	11
% Street/Sidewalk:	17.86%	Facade Complexity:	10
# of People in Image:	0	Street/Sidewalk Condition:	7
# Cars/Trucks in Image:	9	Apparent Weather:	Excellent
% Building Obstructed:	12.00%	Predominant Building Materials Used:	Concrete
		Secondary Building Materials Used:	None

Image Catalog Information

Phaidon Atlas Page No.: 660
Building Name: Pulitzer Foundation for the Arts
# of Screen Grabs: 5
Image Size in Pixels: 2873 x 882
Image Size in MB: 0.575

Year Built: 2001
Architect: Tadao Ando Assoc.
Architect Location: Osaka
Building Geo Locator: 38.6398, -90.2334
Building City: St. Louis

Results for Survey Building 10

Word Attribution Survey Respondent Data

Positive Attributes	Attribute	Clicks	%age
	Welcoming	26	9%
	Interesting	44	16%
	Unique	44	16%
	Confident	21	7%
	Natural	10	4%
	Stylish	38	13%
	Honest	38	13%
	*Other (Specify)**	1	0%
	Positive:	**222**	**78%**

*Inviting

Negative Attributes	Attribute	Clicks	%age
	Out-Dated	1	0%
	Utilitarian	3	1%
	Imposing	12	4%
	Fussy	11	4%
	Pretentious	12	4%
	Boring	2	1%
	Confusing	19	7%
	*Other (Specify)**	1	0%
	Negative:	**61**	**22%**

*Bare

Net Attribution Score: **161**
Total Attributions: **283**

Use Identification Survey Respondent Data

Building Use/Function	Function	Clicks	%age
	Offices	4	6.78%
	Worship	2	3.39%
	Dormitory	1	1.69%
	Aquarium	2	3.39%
	Museum	25	42.37%
	Theater	11	18.64%
	Apt/Condo	1	1.69%
	Concert Hall	8	13.56%
	Classrooms	1	1.69%
	Youth Center	1	1.69%
	Library	3	5.08%

Actual: Offices **Correct: 6.78%**

Thumbnail: (See CD for Complete Image)

Image Analysis Summary (Based on Complete Image)

			Rank
% Nature:	6.44%	Building Transparency:	6
% Building:	69.23%	Visibilty of Entry:	6
% Street/Sidewalk:	11.85%	Facade Complexity:	1
# of People in Image:	12	Street/Sidewalk Condition:	2
# Cars/Trucks in Image:	1	Apparent Weather:	Excellent
% Building Obstructed:	9.26%	Predominant Building Materials Used:	Storefront
		Secondary Building Materials Used:	Metal Panels

Image Catalog Information

Phaidon Atlas Page No.:	633	Year Built:	2007
Building Name:	San Francisco Federal Building	Architect:	Morphosis
# of Screen Grabs:	10	Architect Location:	Los Angeles
Image Size in Pixels:	6875 x 888	Building Geo Locator:	37.7788, -122.4110
Image Size in MB:	1.5	Building City:	San Francisco

Results for Survey Building 11

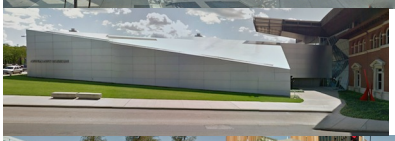
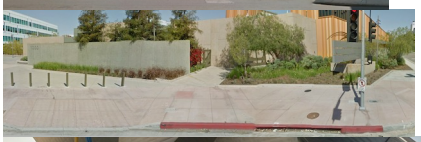
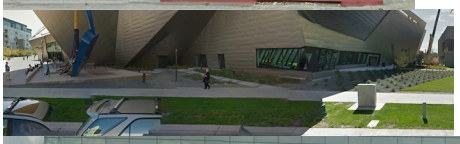
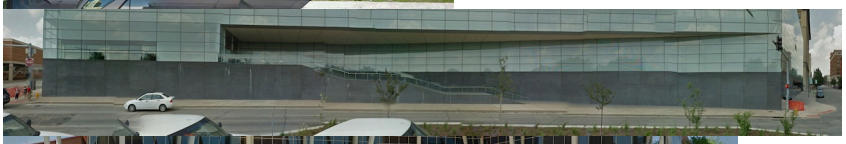
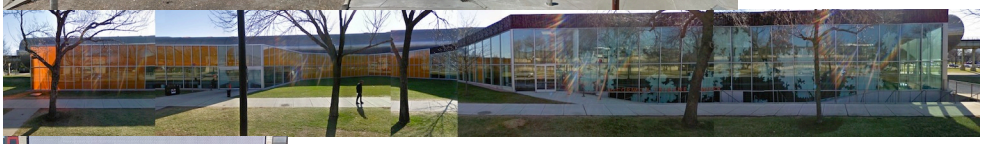
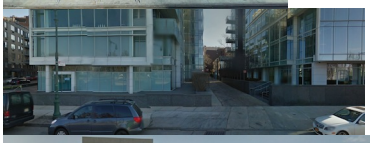
APPENDIX B

RANK ORDER METHODS AND IMAGE RANKINGS

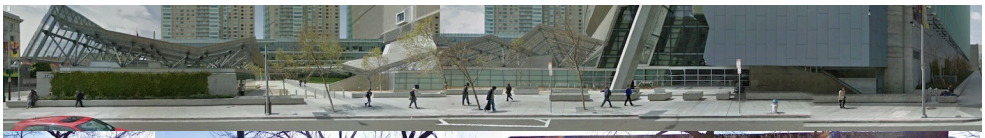
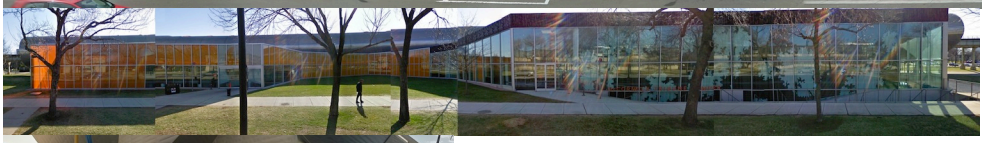
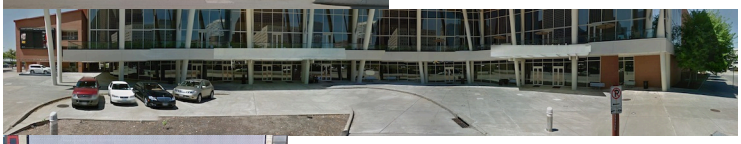
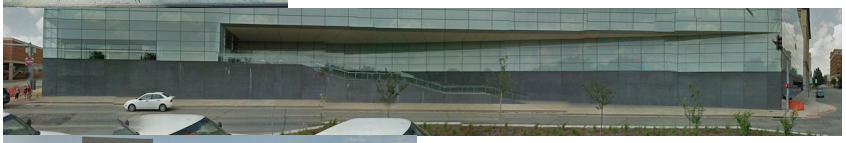
Rank ordering the data for building preference as revealed by net clicks, and several aspects of the image analysis, was conducted once the results of the photo-semantic survey were tabulated. The rankings are numerically shown in Figure 4-2.

- The Transparency Rank from 1 to 11 was given to each building following a linear sorting of the images with a rank of 1 going to the building façade with the greatest transparency and 11 going to the façade with the least. Transparency was defined as visibility of the interior of the building through the exterior wall.
- The Entry Visibility Rank from 1 to 11 was given to each building following a linear sorting of the images with a rank of 1 going to the building façade with the most evident entry and 11 going to the façade with the least. Entry visibility was defined as being able to identify the building entry on the facade.
- The Façade Complexity Rank from 1 to 11 was given to each building following a linear sorting of the images with a rank of 1 going to the building façade with the greatest complexity and 11 going to the façade with the least. Complexity was defined as variety of shapes, forms, patterns and colors.
- The Street Quality Rank from 1 to 11 was given to each building following a linear sorting of the images with a rank of 1 going to the building with the highest quality of streetscape quality and 11 going to the building with the least. Streetscape Quality was defined as the condition of all streetscape components including street, curbs, gutters, planters, sidewalks, medians, and the absence of chaotic elements such as trash, debris, and markings.
- The Rank on Net from 1 to 11 was determined by sorting the buildings according to their respective score on net clicks with 1 corresponding to the highest number of clicks and 11 the lowest.
- The Rank on Use ID from 1 to 11 was determined by sorting the buildings according to their respective score on correct identification of the building use clicks with 1 corresponding to the highest number of clicks and 11 the lowest.
- The Rank on % Nature from 1 to 11 was determined by sorting the buildings according to their respective score on how much of the image area was occupied by nature with 1 corresponding to the highest and 11 the lowest.
- The Rank on % Building from 1 to 11 was determined by sorting the buildings according to their respective score on how much of the image area was occupied by the building itself with 1 corresponding to the lowest and 11 the highest.

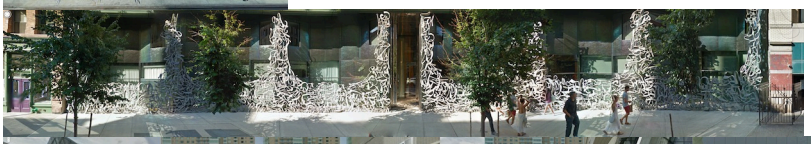
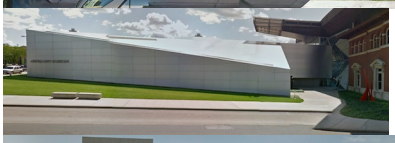
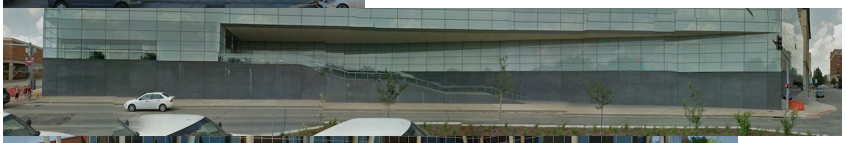
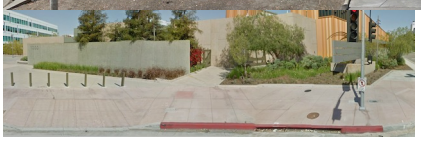
- The Rank on % Street from 1 to 11 was determined by sorting the buildings according to their respective score on how much of the image area was occupied by street and sidewalk with 1 corresponding to the lowest and 11 the highest.
- The Rank on % Obstructed from 1 to 11 was determined by sorting the buildings according to their respective score on how much of the image area was occupied by the building itself with 1 corresponding to the lowest and 11 the highest.

No.	Building Image
1	40 Bond St. 
2	Akron Art 
3	Cal. Fndtn 
4	Denver Art 
5	Figge Art 
6	Hobby Perf. 
7	McCormick 
8	New Mus. 
9	Perry Apts. 
10	Pulitzer 
11	SF Fed. Bldg 

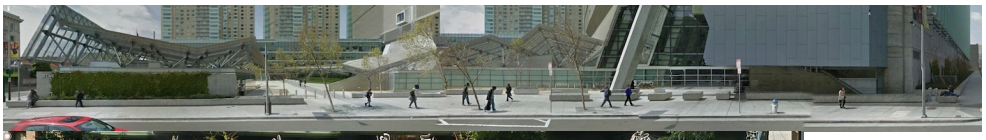
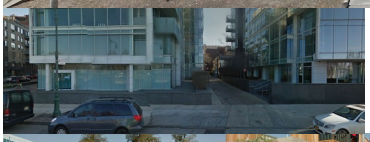
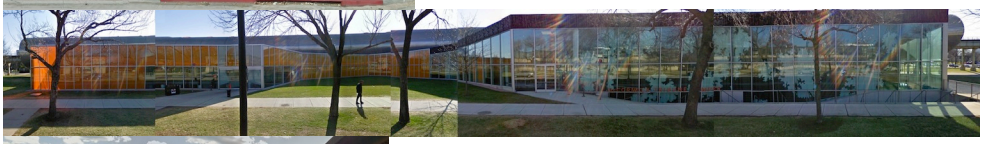
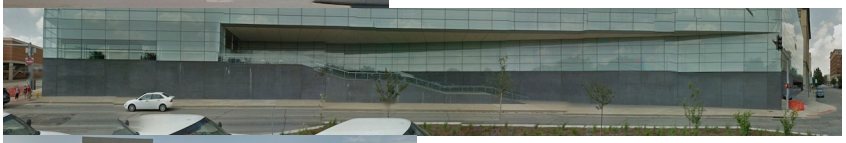
The 11 Buildings Selected for the Survey Instrument

Rank	Building Image
1	SF Fed. Bldg 
2	McCormick 
3	Denver Art 
4	40 Bond St. 
5	Cal. Fndtn 
6	Perry Apts. 
7	Akron Art 
8	Hobby Perf. 
9	New Mus. 
10	Figge Art 
11	Pulitzer 

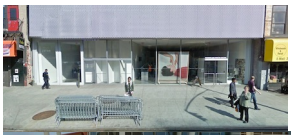
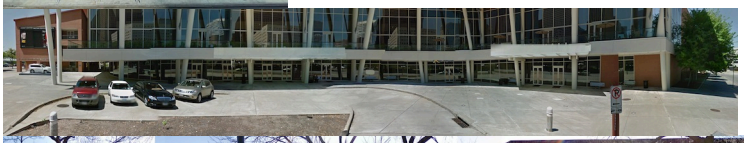
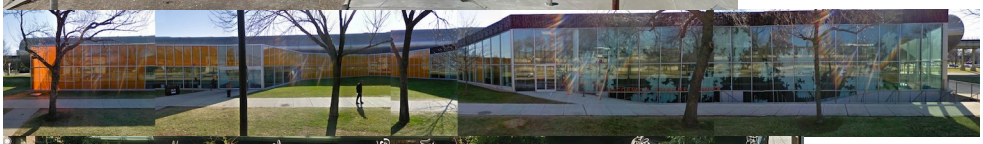
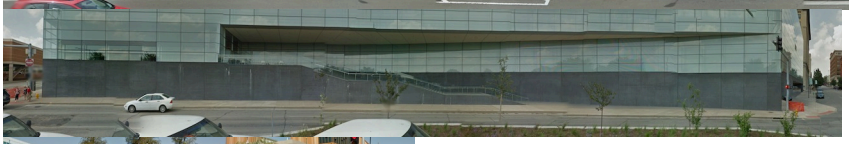
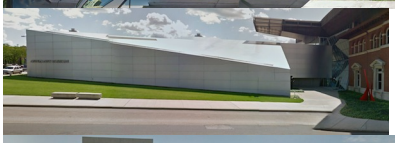
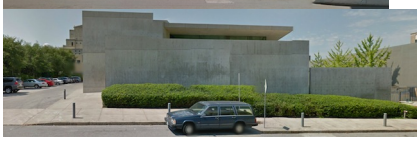
Rank Order of Buildings Based on Net Clicks (1 = Most Clicks)

Rank	Building Image
1	McCormick 
2	New Mus. 
3	40 Bond St. 
4	SF Fed. Bldg 
5	Denver Art 
6	Akron Art 
7	Pulitzer 
8	Perry Apts. 
9	Figge Art 
10	Hobby Perf. 
11	Cal. Fndtn 

Rank Order of Buildings Based on Streetscape Quality (1 = Highest Quality)

Rank	Building Image
1	SF Fed. Bldg 
2	40 Bond St. 
3	Denver Art 
4	Hobby Perf. 
5	Perry Apts. 
6	Cal. Fndtn 
7	McCormick 
8	Akron Art 
9	Figge Art 
10	Pulitzer 
11	New Mus. 

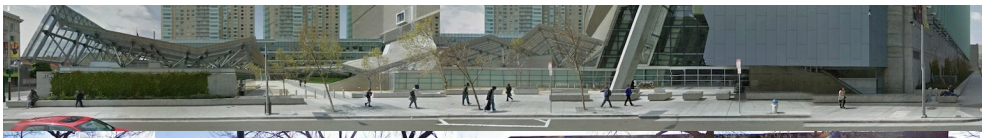
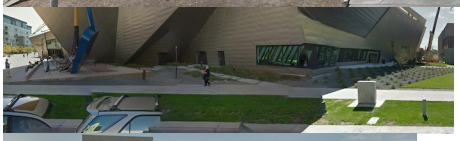
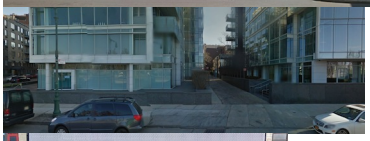
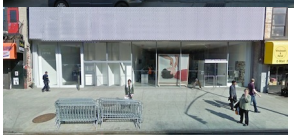
Rank Order of Buildings Based on Façade Complexity (1 = Most Complex)

Rank	Building Image
1	New Mus. 
2	Hobby Perf. 
3	McCormick 
4	40 Bond St. 
5	Perry Apts. 
6	SF Fed. Bldg 
7	Figge Art 
8	Cal. Fndtn 
9	Denver Art 
10	Akron Art 
11	Pulitzer 

Rank Order of Buildings Based on Entry Visibility (1 = Most Visible)

Rank	Building Image
1	New Mus.
2	McCormick
3	Perry Apts.
4	Hobby Perf.
5	40 Bond St.
6	SF Fed. Bldg
7	Figge Art
8	Denver Art
9	Cal. Fndtn
10	Akron Art
11	Pulitzer

Rank Order of Buildings Based on Façade Transparency (1 = Most Transparent)

Rank	Building Image
1	SF Fed. Bldg 
2	McCormick 
3	Figge Art 
4	40 Bond St. 
5	Hobby Perf. 
6	Denver Art 
7	Pulitzer 
8	Cal. Fndtn 
9	Akron Art 
10	Perry Apts. 
11	New Mus. 

Rank Order of Buildings Based on Image Size (1=Largest

APPENDIX C

PHOTO SEMANTIC ASSESSMENT SURVEY INSTRUMENT

[SURVEY PREVIEW MODE] Architectural Street Credibility: Contemporary Buildings Through the Eyes of the Google Street View Camera Survey

Architectural Street Credibility:
Contemporary Buildings Through the Eyes of the Google Street View Camera

Hello Graduate Student!

Thank you participating in this study of contemporary architecture at street level.

• On the following pages you will see photos of the ground floor of several buildings. You will be asked to give your impression of the building's positive and negative attributes by clicking checkboxes next to words.

• You can click all the boxes, none of the boxes, or any number of boxes you like. You can also add a word of your own if you feel the words presented don't quite capture your impression of the building.

• Until you click the "Done" button, you can change your answers freely - simply navigate backward and forward through the survey using the "Prev" and "Next" buttons at the bottom of each page.

• At the end of the survey you will be asked to provide a tiny bit of information about yourself, and then you're done!

• Please note that participation in this survey is entirely voluntary. No harm will come to you whether you take the survey or not. You will not be identifiable as a participant in any way. Also, there is no reward for taking the survey other than the warm feeling in your heart for having helped a fellow student.

Thanks again! Your involvement is greatly appreciated.

Next

[SURVEY PREVIEW MODE] Architectural Street Credibility: Contemporary Buildings Through the Eyes of the Google Street View Camera Survey

Architectural Street Credibility:
Contemporary Buildings Through the Eyes of the Google Street View Camera

Please look at the Street View photo of this building... (scroll to the right if you can't see the entire image)

What are the building's positive attributes? (Select as few or as many as you like)

- [ ] Welcoming
- [ ] Interesting
- [ ] Unique
- [ ] Confident
- [ ] Natural
- [ ] Stylish
- [ ] Open

Other (one word, please specify)

What are the building's negative attributes? (Select as few or as many as you like)

- [ ] Out-Dated
- [ ] Utilitarian
- [ ] Imposing
- [ ] Fussy
- [ ] Pretentious
- [ ] Boring
- [ ] Confusing

Other (one word, please specify)

What would you say is the function or use of this building?

	Office Building	House of Worship	Dormitory	Aquarium	Museum	Theater	Apartments/Condominiums	Concert Hall	Classroom Building	Youth Center	Library
Select One...	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Prev Next

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Architectural Street Credibility:
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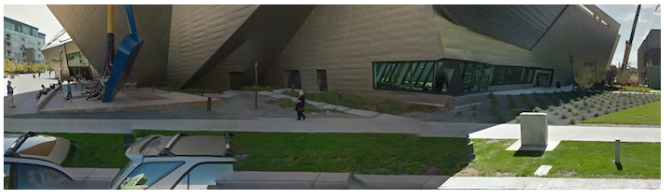
Please look at the Street View photo of this building... (scroll to the right if you can't see the entire image)



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Select One...	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Prev Next

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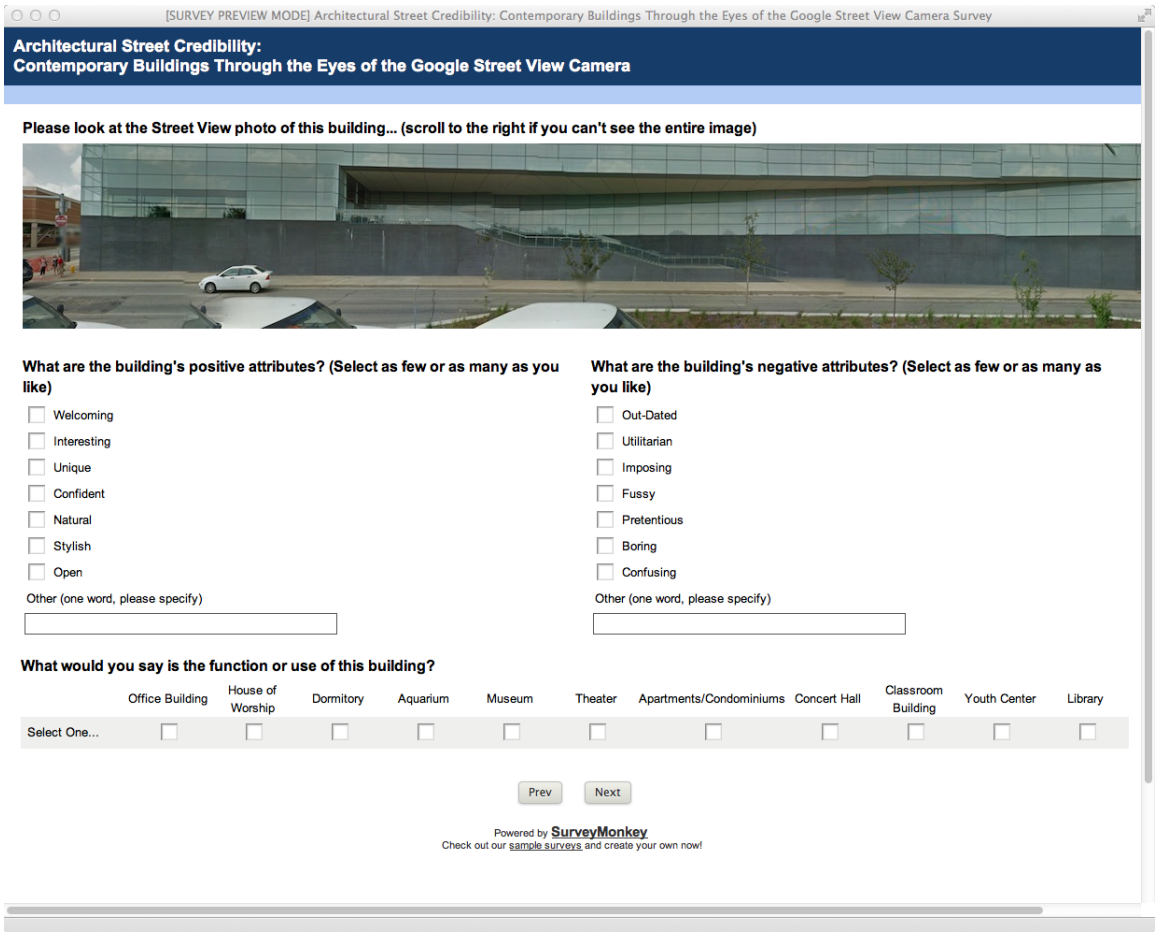
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Select One...											

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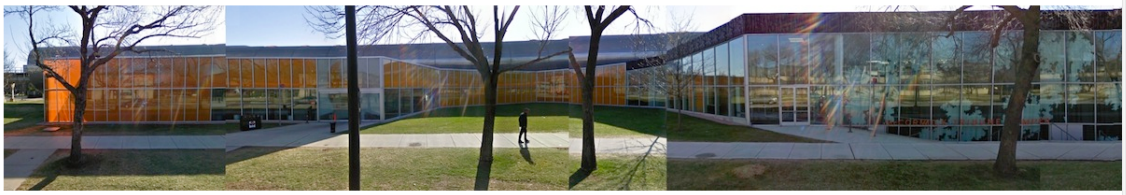

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Architectural Street Credibility:
Contemporary Buildings Through the Eyes of the Google Street View Camera

Please look at the Street View photo of this building... (scroll to the right if you can't see the entire image)

What are the building's positive attributes? (Select as few or as many as you like)

- [ ] Welcoming
- [ ] Interesting
- [ ] Unique
- [ ] Confident
- [ ] Natural
- [ ] Stylish
- [ ] Open

Other (one word, please specify)

What are the building's negative attributes? (Select as few or as many as you like)

- [ ] Out-Dated
- [ ] Utilitarian
- [ ] Imposing
- [ ] Fussy
- [ ] Pretentious
- [ ] Boring
- [ ] Confusing

Other (one word, please specify)

What would you say is the function or use of this building?

	Office Building	House of Worship	Dormitory	Aquarium	Museum	Theater	Apartments/Condominiums	Concert Hall	Classroom Building	Youth Center	Library
Select One...	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

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Thank you Graduate Student!

Your participation in this study is greatly appreciated. Hopefully you had fun taking the survey, and maybe caught a glimpse of how contemporary buildings impact urban design at street level.

If you could please answer one more question below and then click "Done", your work will be complete!

Thanks again.

Here's that last question...

What was your undergraduate major?

Prev Done

APPENDIX D

IRB APPROVAL

EXEMPTION GRANTED

Edward Cook
The Design School
480/965-7662
EDWARD.COOK@asu.edu

Dear Edward Cook:

On 10/25/2013 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	Architectural Street Cred: Contemporary Buildings Through the Eyes of the Pegman
Investigator:	Edward Cook
IRB ID:	STUDY00000124
Funding:	None
Grant Title:	None
Grant ID:	None
Documents Reviewed:	• CookHRP-502c - TEMPLATE CONSENT DOCUMENT -SHORT FORM.pdf, Category: Consent Form; • HRP-503a Protocol Architectural Street Cred.docx, Category: IRB Protocol; • Survey 1 Respondent Form.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Survey 2 Form.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions);

The IRB determined that the protocol is considered exempt pursuant to Federal Regulations 45CFR46 (2) Tests, surveys, interviews, or observation on 10/25/2013.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,

IRB Administrator

cc: John Ball
John Ball
Edward Cook